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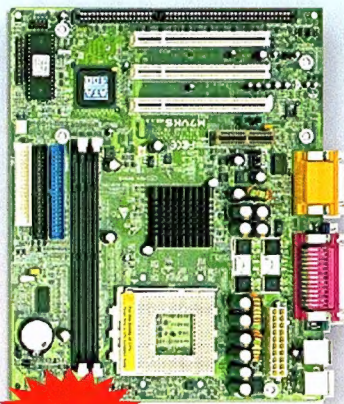


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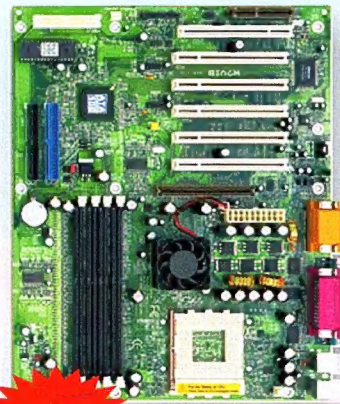
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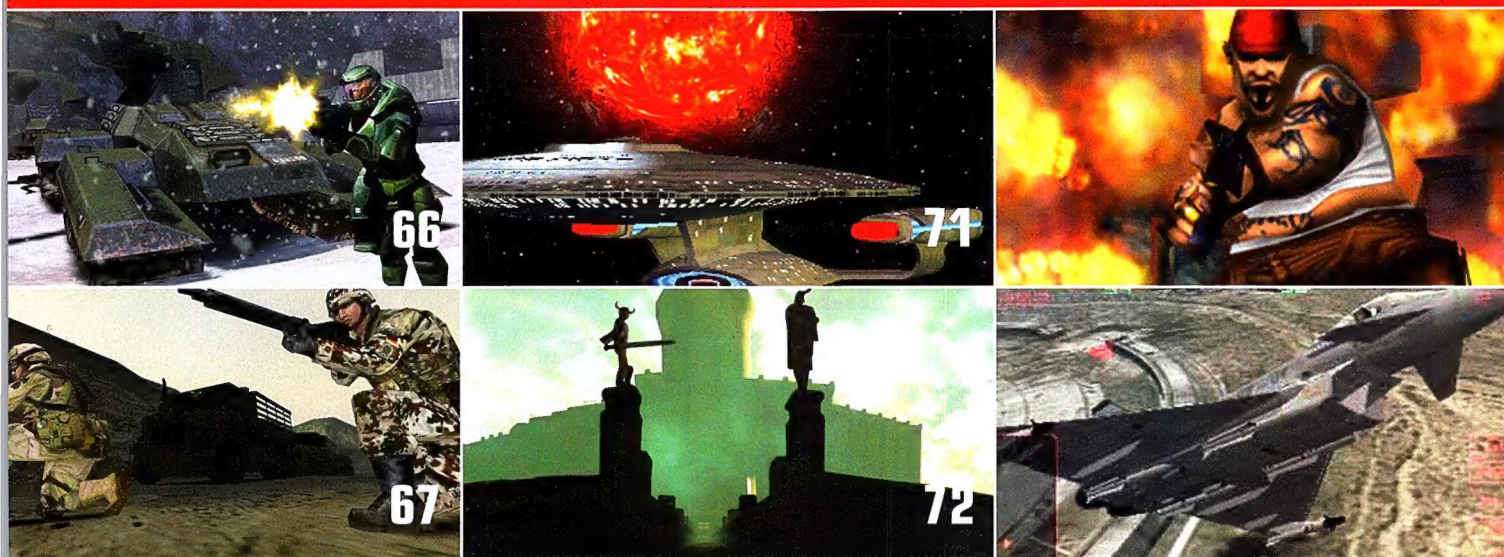
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Get your hands on Altec Lansing speakers, an Athlon XP 1700+ with ASUS A7N266-C mobo or 20MB of online storage. Stop reading and start entering now!

PUPPY LOVE

So one day we thought, 'Hey! Cool! Let's get Sony to send us one of its little robot dogs and we'll go nuts on it. Overclock it and sh!t! We'll case-mod it, it'll be full sick!' As one, Team Atomic stood and shouted, 'Let's rOck!'

I can't remember exactly what we told Sony, but we just sort of talked really fast, non-stop, until we were interrupted and asked, 'So you want an AIBO for a while?' And we're like, 'Yeah'.

Next day AIBO arrived. The Sony bloke gave a demo that we understood some of, then Lil Machine was taken away by writer Alex Kidman to do the article. Mr Kidman has kittens, has a kid on the way and his favourite hobby is screwing with things that are meant to be left alone. Perfect!

As the days went by Alex's email reports grew from, 'Yeah, it's pretty cool,' to 'This thing's freakin awesome!' Our tempered response was of course, 'Take your time Alex, dig deep, fruck hard.'

A month passed. Then Mr Kid-Man came in with Puppy and the stonker of a literary techfrenzy you have in this issue. Mission accomplished, roger, over and out. Before we sent RoboPuppy home, it seemed like a good idea to fire up Lil Machine and have a play. Just for a couple of hours.

A month passed. In that time Puppy became the #1 most-loved star of Atomic HQ. Puppy freely roamed the office, learning his way around the place, making friends and evolving as his AI routines responded to the positive and negative reinforcements he was given each time he did something interesting. The reinforcement was universally positive. Which probably, ultimately, wasn't entirely helpful. This AIBO was one of Sony's demo units that had done the rounds of mags, TV shows and shows — it was a pretty frucked up little kid, having had so many parents, so many horrible, nasty, uncaring parents giving conflicting love and hate signals, leaving its innocent mind a corrupted mess.

AIBO is Tamagotchi to the power of a million, maybe more. The AI is quite stunning and it's almost compelling to spend time — all your time — having a play, observing the effects of your training. The engineering, too, is quite amazing. Watching Puppy waddling around, doing little dances and kicking soft toys leaves you with yet another reinforcement that most Sony gear must be based upon reverse-engineered captured alien technology.

Alas, nothing lasts forever. Especially good things. One day some people from Sony called, just like we knew they would, but weren't emotionally acknowledging. Tomorrow was go-home Puppy day. We did beg, I tells ya. We all felt sick. Promo Puppy was probably going off to those fun loving bastards at FHM, who would probably test how far it can walk with a schooner balanced on its back.

Whatever. Emotional detachment. It's just a fancy lump of plastic. Pfft.

The day after Puppy was taken away Sony tormented us by announcing the all-new bipedal RoboPet. It can fall over and get back up again. It can dance, and surf. It can do a zillion more things than Puppy and it costs as much as a luxury car. Bloody great.

That was a couple of weeks ago and I can say that we're over Puppy. All we're left with now is the happy thought that the office girls still don't know AIBO has a built-in wireless LAN transmitter and a camera in its nose.

Ben Mansill



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MAXIMUM POWER COMPUTING

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Short Circuits

◀ The US Global Positioning System may soon face some stiff competition in the form of Galileo, a European satellite positioning system capable of giving civilian-level positional data down to an accuracy of one metre. Originally proposed in 1999, the Galileo project was all but dead after the United States applied massive pressure to several European countries, telling them to drop it. However, at a recent European Union member summit held in Barcelona, EU representatives decided to push ahead with Galileo regardless of US opinion.

If Galileo holds to schedule, the system of 30 geo-synchronous satellites should be online by 2008 — giving us a Global Positioning System that doesn't rely on continued US goodwill.

◀ Most people won't pay for online content. That's the conclusion of a recent study by Jupiter Media Metrix, which revealed that 70% of adult Web surfers 'can't understand why anyone would pay for content.' This seems self-evident to those accustomed to the whole 'information wants to be free' ethos that the Net was built upon. However, as more companies find Internet advertisements making little or no money, subscription and micro-payments for content will become more common.

While some sites have made a success of selling content online, there is a long list of defunct companies that failed to make content pay the bills. Perhaps the real question businesses should be asking is not 'should we make our online content subscription based?' but rather 'is the content we offer actually worth anything to anyone in the first place?'

GDC Wrap up



① Unreal Tournament 2003 features quite serious hardcore lushness

The annual Game Developers Conference in San Jose, California has been known for years as the launchpad for new platforms, such as the PlayStation 2 and the Xbox. Although the announcements were low-key, they were none-the-less important to gamers worldwide. Here are some highlights from the show, March 20 to 23, 2002.

Much of the buzz on the show floor was about Unreal Tournament 2003. The new demo from game publisher Infogrames held game editors in a speechless stupor as it features a hearty dose of multiplayer action and gore. The follow-up to the wildly popular 1999 shooter will be released this summer. The game features smarter AI, hordes of alien baddies, and a huge arsenal of weapons. Players will choose from a menu of 50 characters and fight in more than 30 arenas. The game is being developed by Digital Extremes, but it employs Epic's next-generation Unreal technology including LIPSinc. This software creates realistic mouth animation when the characters talk — no matter what language they are speaking.

Valve, the creator of Half-Life and Counter-Strike,

unveiled Steam, a broadband software delivery system that enables game levels to download and install quicker than before. About three-quarters of Valve's one million registered online users have broadband, according to Valve's managing director Gabe Newell. Steam is a distributed file system and shared set of technology components that can be implemented into any software application. So, not only are game levels delivered more efficiently, but audio files and messaging are also enhanced.

Ted Hase, director of third-party Windows gaming and entertainment for Microsoft, addressed content performance. He met individually with game editors to discuss the advancements in DirectX 8.1. 'The latest version of DirectX offers developers robust tools to create truly mind-blowing innovations in graphics, sound, networking and effects,' Hase said. He also added that advances in DirectX allow gamers to enjoy enhanced portable games because the software runs on mobile phones, PDAs and other 'personal entertainment devices' such as MP3 players. DirectX 8.1

is a step toward the 'Where you want it, when you want it,' model for media delivery, Hase said.

Also riffing on 'enhanced entertainment' was NVIDIA with the announcement of its DVD player/decoder: a pocketbook sized, lime green device that offers video and audio playback similar to Tivo, including the ability to pause and replay live TV.

The Personal Cinema is also packaged with GeForce3 and GeForce2-based graphics boards, Dolby Digital sound and frame-by-frame video capture technology. NVIDIA pushed GeForce4's family of GPUs (graphics processing units) for developers: 128MB frame buffer; 650MHz DDR memory and 300MHz core clock — the world's fastest — the GeForce for Ti, delivers nearly twice the memory bandwidth of previous high-performance GPUs. During game play this means that in, say, an outdoors environment, the beach has granules of sand, blades of grass move independently in the wind, and clouds effortlessly glide across the sky.

WildTangent's Alex St. John was on hand to demonstrate the Redmond, Washington-based company's latest Web Driver technology. St. John demonstrated a couple of Java-enhanced games including an Asteroids-style game and a racing game, each with the ability to run on the desktop.

WildTangent's 3D Web Driver allows users to access media-rich content such as games, video and audio clips, and it also allows companies to reach the users. A Coke can just might pop up and tumble across a spreadsheet as the user is tabulating an important expense report. □

Under the hood

The television commercial marking the launch of the new Holden Monaro was an impressive piece of CGI, created in Melbourne by Leo Burnett Melbourne and generated by post-production and animation house, Iloura (www.iloura.com.au). There are several notable aspects to the commercial, but the most impressive was that the animation, rendering and pre-compositing was done using some very familiar PC hardware before final compositing using Flame on higher-powered specialist graphics workstations.

The production house Silverscreen Australia set the challenge to Iloura to put the Monaro into a driving game, taking the viewer through a car selection screen and then showing the Monaro duking it out with a range of sports cars that are instantly familiar to anyone who has played games like Gran Turismo 3 or Project Gotham. The racetrack passes through what Iloura call an iconic Australian city, made up from models based around actual buildings from various cities.

The project initially called for a combination of CGI and live footage of the Monaro in action, but the computer generated Monaro model (based upon actual CAD

designs supplied by Holden) ended up working out so well that a minimal amount of real footage was used, with the bulk of the commercial done with CGI. This is incredibly effective, as you can see for yourself by downloading and viewing the commercial from www.iloura.com.au/work/Monaro/monaro.htm

This feat was achieved with the help of a 28 machine render farm outputting the rendered frames to a central server. The philosophy behind the render farm is a simple one: rather than using a few expensive high-end workstations, better results can be achieved by using a large number of relatively cheap machines, each rendering a single frame at a time. Remember that this isn't gaming or onscreen display of rendered images: the actual rendering process is almost exclusively number crunching and relies mainly on the CPU.

This is controlled by a combination of the inbuilt Administrator software in 3D Studio Max and custom code running on one of the render farm machines.

The machines in the render farm are all 1.2GHz and 1.4GHz Athlon-based systems running on ASUS



① Where the magic happened.

A7A266-E motherboards, each sporting 1GB of SDRAM and 32MB ASUS V7100 GeForce2 MX-400 video cards. Despite the fact that the A7A266-E supports both SDRAM and DDR, SDRAM was chosen for rendering purposes after Iloura's testing showed the minimal performance increase when using DDR did not match the price difference at the time the systems were purchased.

Apart from the render farm, Iloura also uses Athlon systems for its animation workstations. In this case they are much more gruntier, using dual Athlon MP processors tied to ASUS GeForce3 Ti200 cards with 1GB of DDR RAM. Again, the choice of the GeForce3 over the more expensive Quadro cards was due to the price difference not matching the small increase seen in performance.

It is always satisfying to see an Australian company doing such quality work, just as it is great to see some familiar hardware running the whole thing.

Short Circuits

◀ CeBIT is one of the world's largest IT and communications trade shows. What it is not, however, is a place for games. According to the rules, 'products which do not accord with the product category index of the event may not be exhibited unless they are absolutely necessary for the presentation or functioning of the actual exhibition object.' As CeBIT is primarily aimed at manufacturers and Industry, playable game displays are verboten. For the past three years, Sony has pretty much ignored this rule by allowing visitors to play the company's consoles during the show. This year however, Microsoft complained and show organisers asked Sony to turn its consoles off. Not happy with the request, Sony went one better by taking its stand and going home.

While this is an interesting story in itself, what makes it much more interesting is the fact that both Xbox and GameCube were available for people to play at other stands — Xbox at Western Digital's stand and GameCube at ATI's.

Of course, it could probably be argued that both WD and ATI were using the systems as a demo of what can be achieved using their technologies (the Xbox uses WD hard drives, while the GameCube uses ATI's Flipper chip). Regardless, it's a somewhat ingenious way of circumventing the rules.

◀ The world, including Australia, has a new graphics card brand. Unitech was formed by a bunch of guys from 3D Power, STB and 3dfx. The new company has taken sides with ATI, at this stage. Check out www.unitech-na.com/mainaus.htm for the lowdown on its stuff, as well as the Australian connection.



Short Circuits

◀ Gravity is lumpy. Or, to be more precise, the gravitational field surrounding the Earth is lumpy. Density differences in various materials that make up our planet ensure its gravitational field is something less than spherical. Current gravity maps show this on a rudimentary level, but lack the detail needed for most scientific applications. However, this will change with the advent of GRACE.

GRACE (Gravity Recovery And Climate Experiment) is a joint US and German project aimed at updating our picture of the Earth's gravitational field. The project consists of two satellites that will orbit the earth 16 times per day, linked via microwave signal. This signal will keep separation between the two satellites constant while other onboard instruments measure the effect gravity has on each satellite. By comparing data, Scientists can determine where gravity is stronger than the accepted average, and where it is weaker.

If all goes to plan, GRACE will deliver an updated gravity map each month. This data will be used for modelling of global warming, polar icecap melts and movement of large masses of water.

◀ Lindows.com has landed the first blow in the upcoming legal fracas between itself and Microsoft after a US judge rejected Microsoft's attempt to stop Lindows.com from selling its Linux-based LindowsOS operating system. The ruling means Lindows.com may continue to sell LindowsOS, which offers the ability to run Windows-based programs, pending a final decision in court on whether the product's name infringes in any way on Microsoft's copyrighted Windows trademark.

CeBits

This year's CeBit show in Hannover, Germany continued the trend of diminishing attendances that has plagued the big IT expos (except Taiwan's Computex) for the past few years. While there were no earth-shattering announcements, several manufacturers released interesting new products.

Despite the pre-show rumours ATI's updated RADEON 8500 chipset, the RV250, was not unveiled. Instead ATI launched its motherboard chipsets for both AMD and Intel processors.

Taking a leaf from NVIDIA's book, the Northbridge with integrated RADEON 7000 graphics is called the RADEON IGP and the Southbridge goes by the unique IXP name.

NVIDIA's presence was limited, with its only major announcement being nForce variants that use DDR333, the nForce 615-D and 620-D.

Intel was waving around the latest prototype of the successor to the Itanium, the McKinley, and even running some simple Mandelbrot benchmarks.

PowerVR unleashed yet another variant of the original KYRO, the KYRO II SE, which is slightly quicker than the last KYRO II, but features a bizarre fusion of hardware T&L emulated in software. As far as we can tell this works the same way as normal software T&L except that applications think the card has hardware T&L. Kooky!

More interesting was the PowerVR MBX chipset, which is a 2D/3D graphics chipset for PDAs complete with features such as FSAA, but lacking a T&L unit.

SiS showed off the dark horse of budget chipsets, the SiS330. This sucker purportedly has performance at the level of a GeForce4 MX, but actually has hardware support for pixel shader version 1.3 and is DirectX 8.0 compliant. Expect to see more of this baby in the coming months. □

atomican

Superheroes, gaping Netsplits and services outage, more Webcams, furious channel access debates, Ben Mansill on Trial and then going on a Cyber Crusade, new sections in the forums, *that* cover, an appearance by *cough* someone on a nationally broadcast game show. . . Is it humanly possible to fit any more into the space of a month without causing severe cerebral damage?

For those using pigeons to send packets to their ISPs, 'That Channel Woman' (Gramyre), 'When is it "Early 2002"?' (Virtuoso), and 'That funny tall guy with the weird name' (Take a guess!), have been upgraded to Superhero status. 'Papa Smurf' (Mael) is currently cleaning the beer cans and dirty clothes out of Atomic Über-secret Superhero HQ in preparation for the new arrivals.

What is it with all the Webcams at the moment? It seems that every man, woman and dog (well maybe not dog. . . yet) seems insistent on having their 'nitidus visio' beamed over the Internet. 'That Channel Woman', Flick, kunzie, Praetorian, Madeleine, ProFX, and sniper_cs, just to name a few, deliver their gobs to the public on a regular basis. Apart from the occasional nose picking, or bum scratch, Webcams are about as interesting to me as watching a blade of grass grow over a 30-year period.

Mr Mansill has been very busy this month: he has been on trial for atrocious crimes, and continues on a Cyber Crusade. Luckily, Ben was defended in court by the illustrious Chaos.Lady, proving that the charges were false, and that the evil mastermind Mordain was behind it all. We all hope that this fiend will remain behind bars, without a deal, Ford, ham, or anything else.

On another note, you may know yours truly has been on the game show, *The Weakest Link*. Hopefully, around the time that you read this, the show will have not aired yet. The best date I have for airing is late-April/early-May, or mid-2002, but be sure to check the forums for updates. So stop asking!

Wilkshake

What's HOT

- DDR266 - Fast enough for the Athlon
- POWERVR MBX - New, exciting mobile 3D
- AIBO - Like a real world K9
- NANOBOTS - More than meets the eye
- ANZAC BISCUITS - Good Aussie tucker

What's NOT

- DDR333 - Can anyone say bottleneck?
- KYRO II SE - Another year, another overclock
- LASSIE - Reacts badly to electricity
- AUTOBOTS - Too big to be useful
- TIM TAMS - All American conspiracy

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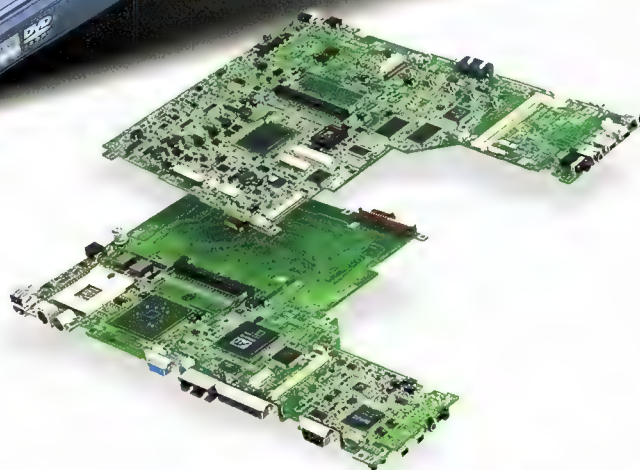
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The hard way

'Be Gentoo with me' pleads Ashton Mills, who has been up all night rolling his own OS.



'But I can now at least build my own OS, part by part like a Lego creation, optimised purely for my system and my requirements,'

I have a new toy — and I have been playing with it and breaking it apart as often as possible. Maybe I'm a sadist — surely some of you will think so — but in truth it's all about the fun of getting your hands dirty: of playing and not just using. Abusing, voiding warranty.

As Atomicians we're people who love to tweak and fiddle, build PCs from scratch and case mod to the extreme. A question: is it **just** the final result of your toil that is rewarding, or the journey of getting to the goal as well?

Think of operating systems. We all love tweaking Windows to supercharge its performance: registry hacks; beta drivers; and obscure shareware software that comes with foreign language docs that you'll try anyway. Linux is the same: kernel compiling, Pentium-optimised programs, flexibility and configuration in abundance. It's all good.

But Windows and most distributions of Linux are a collection of pre-made programs ready to go. We can tweak and fiddle and change the end result of the installed OS, but all we are really doing is polishing an already finished product. Where's the fun in that?

So what about rolling your own OS? How sexy would that be? As a tinkerer, a performance freak, a plain old explorer, this is something that makes my loins tingle. Atomic by nature, Atomic by will!

Granted, I haven't wanted to do it all from scratch. I love PCs and technology, I really do, but I also like having a life and doing that social thing where you meet people face to face and do things like talk and get drunk. It has a certain, how shall we say, realism factor to it.

But I can now at least build my own OS, part by part like a Lego creation, optimised purely for my system and my requirements, thanks to a new Linux distribution called Gentoo Linux (www.gentoo.org). This simple but brilliantly implemented method of building your own OS is set to rock the world of broadband geeks.

Gentoo, in essence, gives you a personally tailored and pants-droppingly fast operating system. Instead of installing pre-made binaries compiled for a generic architecture — which is what the Windows family and most Linux distributions do — Gentoo compiles the entire operating system from source code for your specific hardware setup and the configuration parameters you define.

Sound sweet? It gets better — the install CD is but a 16M ISO. It contains just a basic compressed Linux system which when booted presents you with a few handy hints, a 'DOCS!! DOCS!! DOCS!!' pointer to the (you guessed it) docs, and a shell prompt. Oh the excitement of exploring new territory! What more could a hacker want?

With three simple commands I'm on the Internet: one to load the kernel module for the network card (`modprobe`) one to setup the card with an IP address (`ifconfig`) and a simple route command to setup the route through the gateway box. I haven't even started to install the OS yet and I can download from anywhere in the world. Which is precisely the idea.

Once the install scripts are started Gentoo connects to the Web and sucks

down, compiles, and installs in real-time the latest up-to-the-minute source code to the distribution. It starts by downloading the source to the 'gcc' C compiler and compiling it optimised for your hardware using the version of gcc bundled with the ISO. It then switches over to the new optimised version on the fly to continue compiling duties. Similarly when the source to 'wget', the tool used to download from the Web, is later retrieved and compiled the new optimised version kicks in without missing a beat. It's not just building on the fly: Gentoo is using new and optimised versions of its programs as it is installing. I almost wet myself.

With a brilliant package management system reminiscent of Debian's 'apt' to fetch, compile and install just the programs I need, the result is a lean, mean, performance machine with no unnecessary support files. My Athlon-optimised Gentoo box is the fastest booting Linux system I've seen: it's up in half the time it takes XP to load.

But having to do a few things the manual way during install at the terminal made it all the more satisfying — especially in my case, as I had to solve a problem with Gentoo not handling my IDE RAID properly. Being in development it wasn't setup to handle such a configuration and I had to draw on my knowledge to find and fix the problem. Between this and the do-it-yourself install routine, creating my Gentoo box was as rewarding as the final result. It's the fun of getting my hands dirty, of building and not just installing! Happy now.

The concept behind Gentoo provides a glimpse of the future. Why install a generic operating system when you can have one tailored precisely to your system and the services and features you need, installed real-time with the power of broadband? When the Net is all pervasive, when broadband is the norm, Microsoft will be there too. Not necessarily because it makes things any better for the user, but because it means Microsoft can serve Windows BorgXP2005 directly to your machine, leaving no hard copy media and finally, perhaps, ending piracy.

Whatever the future holds, I'm happy just as long as I get to play.



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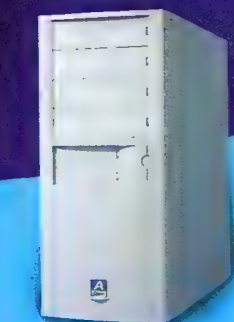
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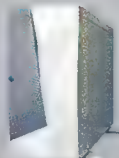
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**'...while trying to fire up the repair console
I got my first hint of the scope of the issue.
The XP disc refused to load the console...'**

I had a really fun weekend a couple of weeks ago. Besides one of the front wheels of my car nearly falling off (that's what you get for owning a 1970s Datsun 260Z, I guess), my developing a cough and a tooth ache (really need to quit smoking and get my wisdom teeth out, I s'pose), my PC at home completely and utterly fell over.

This wasn't any normal crash or freeze — no mere driver conflict or even a rogue IRQ stealing resources — this was the bluest of blue screens that would confront me whenever I tried to boot to Windows XP.

One of those blue screens that on the surface apologises for any inconvenience and gently informs you that there was an unfortunate error loading Windows, and it appropriately stopped loading it lest, heaven forbid, some kind of damage were to occur. Beneath the surface, however, lurked a foul beast, my Ahab's whale with a Machiavellian intention and malevolent intent. I like blue, you see, and this constant reinforcement of conflicting messages over the impression of blue is starting to freak me out.

Safe Mode was no help. Neither was the Safe Mode with Command Prompt. Even running the repair console from the Windows XP install disc, which is usually a fantastic fall-back when everything hits the fan, yielded negative results.

In fact, it was while trying to fire up the repair console that I got my first tangible hint of the true scope of the issue. The XP disc would simply refuse to even load the console, complaining that it had not detected any hard disks.

This is a funny kind of thing for XP to say, as I have three hard disks in my PC, and all three were recognised by my SCSI card during the POST (Power On Self Test) while booting.

I could also get the boot menu offering to start Windows normally or try the various Safe Mode options, so at least my C: drive must have been responding on one level or another.

I defiantly entered the BIOS of my SCSI card, ready to check each disk and confirm what I already knew — that they were functioning (since they were being detected when booting), so I could have more ammunition to hurl verbal and psychological abuse at my PC the next time it failed to load Windows. Lo and behold: I got a SCSI error when trying to read the details of the disks from within the BIOS. Well... that was good news and bad news. Good news: I found the problem: the SCSI card; bad news: there was a problem with my SCSI card.

I had a spare old SCSI RAID card lying around, so I whacked that in and gave it a spin, only to find that it didn't have any XP drivers, and insisted on blue screening (with another error...) when loading Windows.

Right. So I plugged my notebook into my cable modem, managed to get BigPond cable running on XP (no thanks to the supplied Telstra CD — incidentally, I found out that without the software you can get to

ftp://update-server, and download the login software from there), and dug up some Windows 2000 drivers for the RAID card from some German site, only to find that, of course, my notebook doesn't have a floppy drive — hence I had no way of getting the drivers to my PC. Duh.

In desperation, I even tried my old on-board AIC-7880 chip, which I remembered as being faulty (the reason I was using a SCSI card instead).

Yeah, well, that didn't work...

I was starting to run out of ideas by this stage. I'm still not entirely sure why I did what I did next — perhaps it was out of some strange desire for closure — but I put the first SCSI card back into my machine, plugged everything in, and turned it on. You'll never guess. It booted right up. No blue screens. No errors. Not even a scan disk. Spooky.

Anyway, it all made me think.

SCSI.

There was a time, not that long ago, where if you wanted the best hard disk performance, you got SCSI. These days, however, I wonder at the point of SCSI in desktops, even in workstations.

With ATA/100 and ATA/133, as well as the upcoming SerialATA, SCSI no longer has the monopoly on disk I/O bandwidth, and with cheap IDE RAID, you can match the performance of a fast SCSI drive for a comparable or lower price. The whole point of SCSI was the fact that you could attach up to 15 devices, and as such, you needed bandwidth over the one bus to do them all justice.

You can even get Ultra320 SCSI today, with a massive 320MB/sec peak transfer rate, although it'll take at least five or six 10,000rpm drives all going nuts to even approach this peak speed.

On a desktop, that's just not going to happen. If I was building my PC today, I would not hesitate to go for IDE, and I think most people think the same way. SCSI still has a roll to play in the server market, but I think we can safely escort it from the desktop computing premises for good. Ahhh — revenge. . .



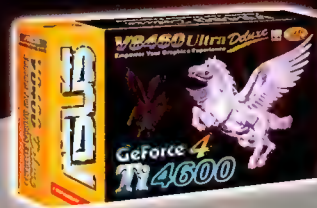
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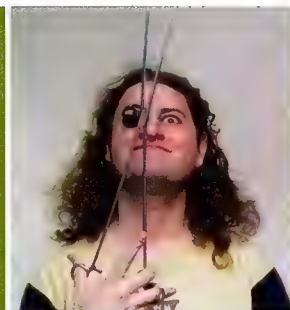
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Je ne regrette rien!

Daniel Rutter gets down and dirty while playing with one of our favourite little friends: Mr Electricity.



'It's perfectly safe, electrically at least, to work on your PC with the thing plugged in and turned on.'

People don't understand electricity. They know there are volts and watts, they probably know there are amps too, and the concept of ohms may have crossed their mind at some point. The relationship between these things, however, seems to be difficult to grasp. Various people know that it's not the volts that kill you — it's the amps.

Well, that's true, but it doesn't mean that anything that draws lots of current will be able to draw that much current *through you*.

If you cut the fence wire around a major suburban power substation and then charge in and swing a crowbar at anything sitting on a four foot stack of insulators, your life will become exceedingly nasty, brutish and short. This is because a substation bus bar has a high electrical potential (lots of volts), and also has no trouble delivering really impressive amounts of current to someone who's decided to pursue a career as a ground stake.

Lots of volts make that high current capacity dangerous.

If you're going to fool with your PC, it helps to understand why *low* voltage isn't an electrocution risk, unless you try very hard to make it one.

Alternating current (AC) circuits can get complicated, but for direct current (DC) circuits like the power plugs inside computers, the basic rule is dead easy. Voltage (in volts) equals current (in amps) times resistance (in ohms). This is Ohm's Law: $V=IR$ or $I=V/R$ or $R=V/I$, depending on what values you know and what value you're trying to figure out. And power, in watts, equals volts times amps.

For a really impressive low voltage circuit, let's think about starting a car.

Automotive starter motors run from 12 volts DC, and can draw hundreds of amps for the brief period (with any luck) when the engine's cranking.

Let's assume the battery delivers exactly 12 volts, and exactly 240 amps is drawn. Now Ohm's Law can tell us the resistance of the circuit (the starter motor, its wiring, the internal resistance of the battery, et cetera). R equals $12/240$, or only 0.05 ohms. And the circuit power, mostly accounted for by the motor, is 12 times 240 — an imposing 2,880 watts.

If 240 amps passes through any significant amount of a human body for any significant period of time, forensic investigators may have to employ DNA analysis to determine who that stuff they found all over the place used to be. More prosaically, a mere 30 milliamps (0.03 amps) across the human heart has a good chance of stopping it.

Where people go wrong here is by thinking that if you disconnect one battery lead in your car, hold the end of the lead in one hand, touch the battery terminal with the other, shout 'Je ne regrette rien!'. . . and then get a partner in scientific exploration to turn the key, you'll be dead faster than someone who's already started his skydive when he discovers the thing on his back actually contains some chocolate and a sleeping bag.

What will actually happen in the above situation — the car situation, not the skydiving one — is nothing.

The reason for this is that the human body has quite a lot of resistance

of its own. If you have a good contact — the whole palm of your hand is touching each terminal — then the resistance across your body is likely to be between about 2,000 and 50,000 ohms. The thinner and wetter your skin, the lower the resistance will be.

Even if your resistance is only 2,000 ohms — which it probably won't be — that's enough to drop the current in a 12 volt circuit to about 6mA.

Since your resistance is actually likely to be much higher, the current through your body is likely to be trivially low. And since your body is part of the circuit, the current through the whole circuit will also be trivially low. Hence, the car will not start, and you will not die.

This is why it's perfectly safe, electrically at least, to work on your PC with the thing plugged in and turned on. Inside the power supply are mains voltages that can hurt you. So don't go sticking screwdrivers in there. Outside the power supply 17 volts is the most you can see across the -5 and +12 rails.

You may smash a fingernail with a fan, you may cut yourself on your cheap pressed-metal case, you may destroy components in any number of amusing ways, but that's about the end of it. Unless your PSU has a horrible electrical fault or you've plugged the PC into a badly mis-wired outlet, electrocution is not on the agenda.

If you burn your skin off or stab through it — which can happen, in higher-than-mains electrocution cases and other mishaps — then the resistance across the whole body *under* the skin is only about 500 ohms.

So if you take a couple of sharp probes, connect them to 12 volts, and stab them into your chest, you'll be in a bad way.

Fortunately, however, most of us have skin everywhere we're likely to touch electrical contacts. Unless you've got some kind of steel plate prosthesis screwed on to your outside, which is worse.

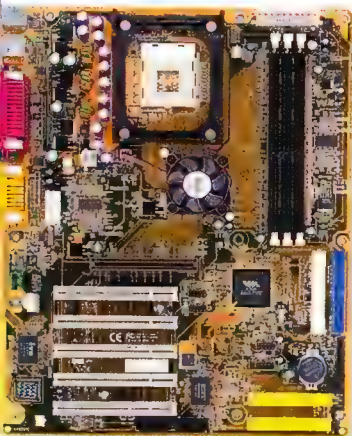
I've got a funny story about that, having to do with licking the mains and rebooting my brain.

But it'll have to wait for another time. ○



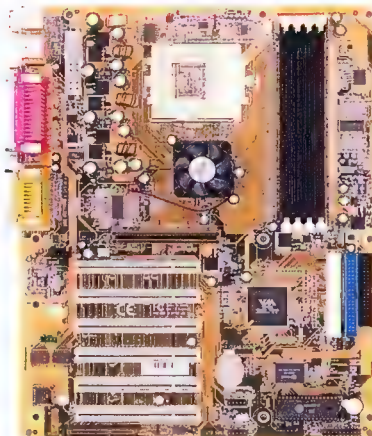
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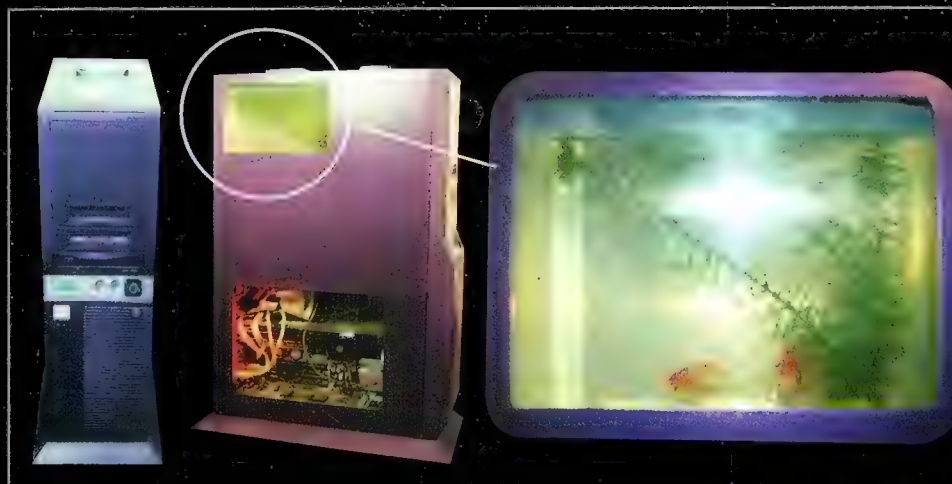
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Steven's Purple Fish Box



Technical details

- LX Gigabyte Motherboard
- Intel Pentium 233MHz CPU
- 64MB SDRAM
- 32x Creative Labs CD-ROM
- TR3 tape drive
- AWE 32-Bit Sound Card
- 1 fish tank
- 2 goldfish
- Underwater shrubbery
- 6GB Seagate IDE Hard Drive
- 32MB 14 Channel SCSI Card
- 7 2x SCSI CD tower
- Red Neon 12 Volt light
- 4MB PCI videocard

The story

OK so the specs aren't high but when you start thinking about water and electronics you need to know that if it springs a leak, it's not your best warez. The case was my boss' old Novel 3.12 server. I needed lots of room and this case had ample above the power supply. The rest of the hardware came from around home and work. The SCSI card came out of an old AST P100 that I got for about \$200 and it too was once an old Novell server. Down with the Novell

servers! Just kidding. The fish are named Snow and Zorro. No, don't call the animal rights groups. When not on show in the computer they have a very large tank far away from any kind of electrics. I did have a Webcam on the tank but used it only for a week to test a Linux box with port forwarding. My biggest problem was the tank. I tried to make my own out of Perspex which unfortunately leaked. I found a plastic container at Kmart, chopped the lid off and the fish went in. Voila, the purple beast was born complete with live fishies. □

Baker's Box



Technical details

- Lian Li PC-75
- Epox 8KHA+
- AMD Athlon XP 1600+ @ 1900+
- 512MB Micron DDR-RAM
- 500W Topower Power Supply
- 9.1GB Seagate SCSI Barracuda @ 10,000 RPM
- 40GB IBM 60GXP 7200RPM
- Yamaha 8x4x32 SCSI CD-RW
- Pioneer 16x DVD Region Free with slot load
- Leadtek GeForce2 PRO 64MB
- Adaptec 2940U2W SCSI Card
- Thermalright SK-6 w/ 92mm fan

The story

The main idea in my case was neatness and looks, whilst adding performance. My ultimate aim in this box is to eliminate all visible cables. I have so far achieved this with the power cables, and am working on the other cables. All cables are rounded to allow better airflow, therefore eliminating noise. My floppy and IDE cables are rounded with metal braiding (covered in clear plastic to eliminate shorting anything), whilst my SCSI cables are hand rounded. Cooling

is provided by 2x rear extraction fans (behind CPU); Dual power supply exhausts, and 2x intake fans (also cooling HDD). I took a spare drive bay plate to a paint matching shop, and I now have a perfect matching paint for the drives. I have currently painted only the floppy drive. Lighting is provided by 2x sound sensitive Cold Cathodes, and 2x slim neons (all blue). Power LED is high intensity blue, with a high intensity red for the HDD access. I also have 2x temperature probes, reporting SCSI drive temperature and ambient temperature. □

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Sun_surfer's AtOmic Shrine



Technical details

- MSI K7T266A Pro2 – RU
- Duron 750MHz
- ASUS A7VL-VM
- 256MB PC100 RAM
- 10GB Seagate HDD
- Stripped open 250W PSU
- Stock AMD heatsink
- Salvaged Celeron 400 fan
- Realtek network card
- 5mm Plexiglass
- Threaded rod
- Dome nuts
- Electrical conduit
- And a big blue neon light

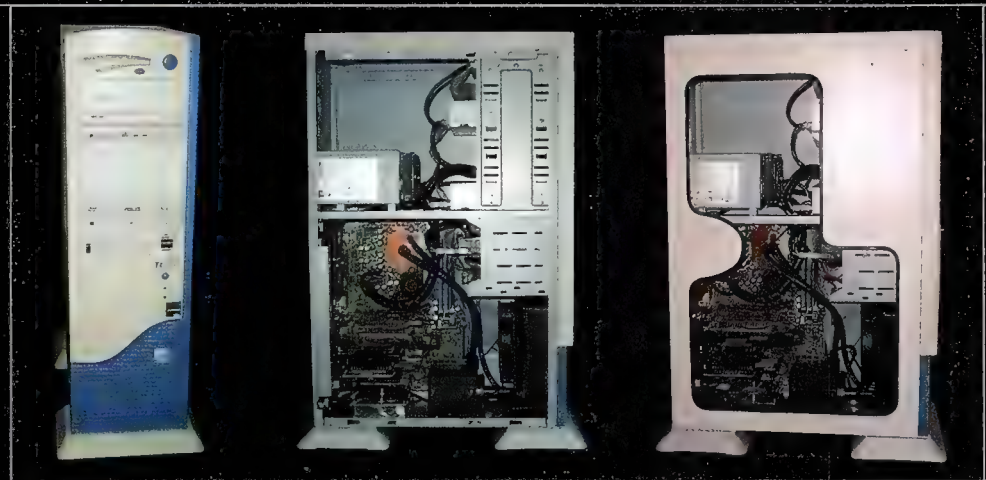
The story

The big 'O' announced, 'Behold the might of thee great Atomic.' As I hid in fear it commanded, 'You, puny one, build a shrine you shall to worship my omnipotent greatness!' 'But... but I'm small, feeble and downright lazy...' I managed to meek. 'Silence! Do as told you will.' I woke up gasping and ran into my store room. Blew the dust off the sacred A7VL-VM, and mated it with the sacred Duron 750. Acrylic from my local sign maker and threaded rods cut to size with the trusty

angle grinder. But alas, threaded rods are too fat! Without another thought, I grabbed the drill and began enlarging the mounting holes on the mobo (not recommend for people with I.Q. above 70). Next the cover of the PSU had to go (covers are for weenies). Electrical conduit sprayed with fluoro red makes good rounded IDE cables. The blessed word 'AtOmic' cut out of the protective plastic for the acrylic sheet and glass frosting spray goes on moments after.

So behold Atomicans! My server, I mean... Our shrine! □

CoolMHz's Box



Technical details

- EPoX 8KHA+
- AthlonXP 1800+
- 2X256MB PC2100 DDR
- Gainward GeForce3 Ti200
- 60GB Barracuda3 ATA100
- ASUS E616 DVD-ROM
- ASUS 32x12x40
- 1x 120mm fan plus 92mm fan plus 2 x 60mm fans
- 10/100 NIC
- ADSL PCI modem
- PC-708 Full tower
- Powmax 500W PSU
- Asonic-8738-6C sound card

The story

One quiet night sitting beside my 7200rpm delta (yeah right), I thought to myself there must be a way of making this quieter. H2O must be the way to go. So I went out and purchased an Eheim 1048 pump and a Danger Den Mage 2-2 (water block). A friend found the radiator at his work which was the perfect size to fit in my case.

After testing it for about 24 hours I assembled it into my case. After thoroughly testing it for a week I am satisfied with the

temperatures. Idle temp is 32c, full load is 40c.

After much debate I finally came up with the perfect shaped window to have. I ran out to the nearest glass shop purchased some Perspex then got it home and started hacking at my case. Now I'm happy that I've got the perfect Perspex window!

To show off the inside of the case I went and purchased two neon lights. The next mission is to give the case a paint job (haven't decided on the colour yet). □

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Intel® Pro 1000T NIC
BENQ® 16X DVDROM
BENQ® Keyboard & Mouse
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Microsoft® Windows® XP Professional

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HgO

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Microsoft® Office XP
Microsoft® Windows® XP Professional
Dimension: 313 (W) x 263 (D) x 36/41 (H) mm
Weight: 2.95 Kg

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MgO

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Freelancer

Old, old school gamers will tell you that the Holy Grail of space sims is to recreate the magic of Elite. More than a few brave developers have explained, during development of their invariably disappointing titles, that 'it's like Elite'. Well, we're sorry, but the feeling of being but one little guy in a universe that throbs with life and scope is yet to be recaptured. Until now, possibly. Freelancer is the Duke Nukem Forever of the space sim world. After winning 'game of E3' a few years running and now in the hands of a new design team after a mid-course correction, Freelancer is finally on track for a release later this year.

We've had a bit of a play of the beta, accompanied by a walkthrough of some sections by Microsoft's development team, and as gobsmacked as we were, we haven't had the full-immersion weekend or three that's needed to gain a real feel for the size of the universe. At this stage, Freelancer's mechanics, graphics, overall feel and design are quite stunning. You ain't seen nebula effects like this before! Lovers of outrageously over-the-top 3D hardware magic will find Freelancer is at least as pretty as Aquanox, but with orders of magnitude more gameplay, it seems. The developer promises the number of missions will be endless, while the feeling of being truly in control of your destiny promises to be real. Boasting 'true Newtonian physics, the ships fly and fight very nicely, including the ability to pull tricks such as circle straffing. However, the whole game is mouse controlled, which works well, particularly in the semi-autopilot mode where the ship flies itself and you just point-and-shoot the baddies. Designed to be an epic single player escapist's paradise, the Freelancer galaxy has been under construction for many years, originally under the leadership of the once-great Chris Roberts. □



GAME DETAILS

WHY WE CARE: The most exciting galaxy to inhabit since the Milky Way.

DEVELOPER: Microsoft www.microsoft.com/games

PUBLISHER: Microsoft www.microsoft.com/games

DISTRIBUTOR: Microsoft www.microsoft.com/games

PLATFORM: PC **DUE:** Oct/Nov 2002

Project IGI 2: Covert Strike

What is it with game makers and lazy titles? Not only are they content to roll out more acronyms than a boy band convention, but they reckon all they need do is wack a 2 (or 3,4,5 etc) on a title's name and they're sorted. At least the latest offender, Project IGI 2, looks like delivering the goods in the gameplay department.

The developer of the original game has decided to try and make amends for some of the frustrating design elements that had more than a few of us removing foliage from our follicles. To this end you will now be able to save in the middle of a mission, so no more having to go back completely to the drawing board just because you got scotched by the very last enemy you met on a particular level.

Enemies won't just pop out of thin air either: instead of continually respawning from the ether your foes are now smarter and have the greater ability to work together as a team. There will be different enemy ranks and each will have a unique behaviour profile. A Ghost Recon-style motion sensitive aiming system has also been introduced, so that you will be able to aim more accurately (and the cross hair will animate to show a narrower field of view) if you are standing still, or even better in a prone position. This has been done in a bid to introduce a more strategic feel to the combat and to make it less attractive to the pogo powered players out there who fire while leaping around all over the place like they're at a Slipknot gig. Having played the game, the visuals look a lot better, and the levels are definitely larger. Even incomplete, IGI2 feels like a much more balanced effort than the original, and the addition of a multiplayer mode (with eight player teams à la CS) should be the icing on the cake. □



GAME DETAILS

WHY WE CARE: Detailed environments and co-operative enemy AI meet heaps of sniper happy action — yay!

DEVELOPER: Innerloop Studios AS / Codemasters

PUBLISHER: Codemasters www.codemasters.com

DISTRIBUTOR: Game Nation www.gamenation.com.au

PLATFORM: PC **DUE:** TBA

Hitman 2: Silent Assassin

The original Hitman: Codename 47 suffered from the age-old problem of having a great concept that was ruined by poor execution. The idea of being a hired assassin was so appealing that 400,000 people parted with cash to buy the game even though it received a panning from most serious reviewers. In fact, *Atomic* was so disappointed with the implementation of the game that we scrapped the review altogether: once again we'd been left with an 'If only. . .' title.

It looks as if this concept is too good to be left to die a buggy death though. Unlike dodgy Hollywood sequels, follow-ups to games actually tend to be better than the original, so when we received preview code of Hitman 2 it took all of three seconds before we'd fired it up to check out the goods. The first Hitman certainly wasn't a slouch in the graphics department, but the reworked Glacier engine we saw in the preview code put even the hallowed Quake 3 engine to shame. Gasp! This new version of Glacier pumps out an average of five to ten times more polygons than the original version, alongside higher resolution textures and a bunch of other funky new features.

Other than the graphics, the next major area to get some TLC is the AI, which was one of the greatest flaws of the original. Unfortunately the code we saw was too early to include the new AI algorithms, so we can only pray that the developer achieves this goal. You can't deny what a great game Hitman 2 could prove to be. Unfortunately the postponement of the game until September alludes to the fact that things haven't gone quite as smoothly as the developer had planned. Let's hope that this extra time is used to turn Hitman 2 into the AAA title it so rightly deserves to be.



GAME DETAILS

WHY WE CARE: Who doesn't want to be a ruthless, murderous assassin?

DEVELOPER: IO Interactive www2.ioi.dk

PUBLISHER: Eidos www.eidos.com

DISTRIBUTOR: Ozisoft www.ozisoft.com.au

PLATFORM: PC/PS2/Xbox **DUE:** September 2002

Combat Flight Sim 3

Flight Sims with guns have truly taken off. Much in the pattern of the serious and proper Flight Sim, the community has taken up CFS, with the editor functions used and abused to full effect. With this momentum now assured, Microsoft has been working hard to take CFS to the next level.

Sporting an all new graphics engine, which sits alongside the proven and impressive FS 2002 physics engine, CFS3 now looks better, runs faster and feels more satisfying to fly.

Piloting a Heinkel 110 and looking down through the unique glass these babies had in the floor of the cockpit showed truly beautiful terrain, replete with lumpy valleys, spiky mountaintops and shrubbery of all shape and size. This is done with the 'Autogen' terrain engine, which mixes about a dozen terrain types and many more terrain features in a fashion that complements what's sort of out there in the real world. The draw distance is particularly impressive.

A rather neat new feature is that pilots will gain in skill as they gain experience. After a few missions you'll be able to spot bandits further away, pull higher Gs and more. Online squadrons are in for some fun infighting, as a Squadron Leader must keep their skills up if they're to continue being the boss — nothing is a given in this, or the real world.

Multiple players can man all the positions on a bomber, which we're sure you'll agree is way cool. Also new is cloud cover that behaves realistically. In older CFSes the enemy AI could see you through clouds, now you can mask your position. For further heightened realism, aircraft sounds were sampled directly from the real thing — in most cases from vintage aircraft flown by the Confederate Air Force (now 'Commerative' Air Force).



GAME DETAILS

WHY WE CARE: Hardcore realism, oh-so-pretty terrain and hardcore mess-with-me-ability.

DEVELOPER: Microsoft www.microsoft.com/games

PUBLISHER: Microsoft www.microsoft.com/games

DISTRIBUTOR: Microsoft www.microsoft.com/games

PLATFORM: PC **DUE:** Late 2002

Yager

Yager is an interesting looking game which came as a bit of surprise when we first saw it being demonstrated at last year's E3. It is hard to believe such a great looking science fiction-inspired combat flight simulator is a debut effort for the German development team.

The action in the game will mix ground attack with airborne assaults and dogfights, and having played an incomplete version of the code it is pleasing to say that Yager's craft is very responsive and has a massive arsenal of weapons. Even better, your ship can hover as well as fly in a more conventional manner. This ability makes ground attack much easier and more satisfying as you can really focus on a target and unload a lethal barrage of ordinance.

Flying will be the main challenge in the game, but you will also command gun turrets on board bigger ships. This part of the game conjures up images of desperately defending the Millennium Falcon while being swarmed by Tie Fighters. The gameworld will feature elements where the plot is advanced and your feet are on terra firma. This narrative part of the game is very impressive visually and will help give more meaning to the faceless air combat missions.

Weapons such as the plasma cannon look superb. You will have more conventional guns and homing missiles that you can use to dispatch your foes and the developer is also looking to implement serious real time 360-degree panning effects when you have successfully downed an enemy fighter. This might see spectacular Max Payne-style animations become part of the mix.

The game will be headed to the Xbox and PC, with the PC version being the only option for those wanting multiplayer games.



GAME DETAILS

WHY WE CARE: A toybox full of guns meets some very cool ships and spectral effects.

DEVELOPER: Yager

PUBLISHER: THQ www.thq.com

DISTRIBUTOR: THQ www.thq.com

PLATFORM: PC **DUE:** June 2002

Beach Life

Beaches, beer and convivial callisthenics: we all love them and Beach Life, a game in development in the UK, brings them together in what is looking like a promising cocktail. The game is to some extent inspired by the mad Poms who fly over to Ibiza and spend their time there gagging for a shag, having it large, driving the porcelain bus and getting horribly sunburnt from time to time.

In Beach Life you manage a number of island resorts and your goals may vary depending on the premises. Want to run the biggest house party seen this side of the exceedingly trashy Manumission? This might be the objective in one scenario. . . or you might have to clean up a polluted lavatory of an island, purifying the water and getting rid of the mess so that you can turn it into a Mecca for pallid pimply tourists (who will probably moan about it anyway).

Naturally the people you attract to your resort in the game have no idea how to entertain themselves, so you have to build and run attractions like jet ski hire operations, amusement centres and other means of consuming your guests' idle time. Having played a very early build of the game it looks like Beach Life is coming together well. The look of the game is colourful and full of touches like swaying palm trees, golden sand and scantily clad skin cancer candidates well wasted on lager stumbling about in a highly amusing fashion. The game will also feature a (as yet unannounced) dance soundtrack featuring some of the major artists who appear on the Ibiza scene, and certainly if the placeholder music is any indication this will add a lot of atmosphere and energy to the game. Beach Life is looking like being huge fun so get your fluoro rave gear and swimming cozzies ready for the release later this year.



GAME DETAILS

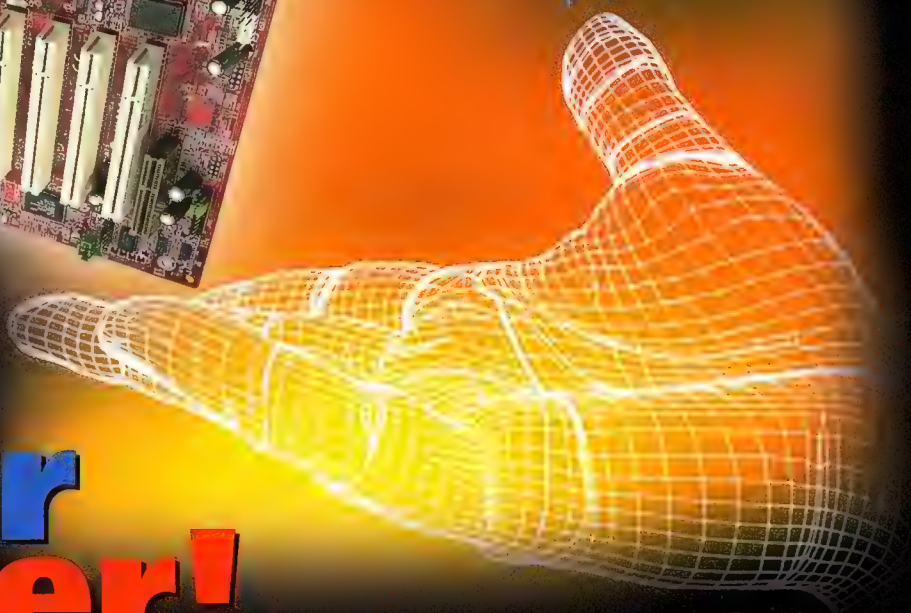
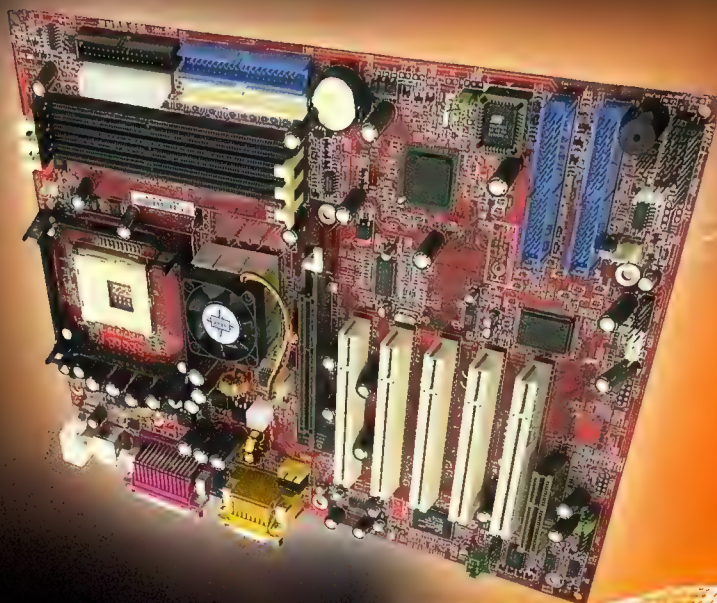
WHY WE CARE: Punters getting drunk and shag-crazy should be enormous fun.

DEVELOPER: Deep Red www.deepred.co.uk

PUBLISHER: Eidos www.eidos.com

DISTRIBUTOR: Game Nation www.gamenation.com.au

PLATFORM: PC **DUE:** TBA



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- promise ATA133 (optional)
- promise Raid (optional)
- USB 2.0 (optional)

K7N420 Pro

- support DDRAM
- support AMD AthlonXP
- support upto 3Gb RAM
- Nvidia Crash12+MCP-D
- onboard VGA and sound
- Dolby-digital SPDIF out
- TV-Out (optional)



645 Ultra

- support 333Mhz DDRAM
- support P4 socket 478 CPU
- SIS 645 chipset
- onboard sound
- 645 Ultra (MS-6547v1)



K7T266 Pro2-RU

- support DDRAM
- support AMD AthlonXP
- KT266A chipset
- Raid (optional)
- USB 2.0 (optional)



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Link to the Future

DSL

Ty Pendlebury taps into the Digital Subscriber Line services.

Six years ago, Telstra and Optus were busily installing broadband networks in a bid to elude the Government's restrictive policies on satellite TV. They encountered numerous hurdles, including prudish councils and legislation regulating the use of overhead cabling. Pay TV has never taken off to the extent that either company expected. But with the explosion of the Internet, the demand for broadband access is only increasing.

The problem is that there is unlikely to be further cable rollout in this country, and so, we must look to other delivery methods to heal our Internet afflictions. The obvious alternative, particularly for people in rural areas is xDSL - 'Digital Subscriber Line' - where the x denotes the generic form of the DSL technology).

How does DSL work?

DSL uses what is known as the POTS, or Plain Old Telephone Service, to send a digital signal (as opposed to a traditional analog signal) which can achieve speeds similar to a cable modem without needing cabling to run past your house. Since the age of the dinosaurs, twisted copper pair has been used to carry voice and data around the world and has remained largely unchanged since its invention. A pair of copper wires runs from each line in the house to the street where it is combined into a cable merging hundreds of others to the exchange.

Copper is an excellent conductor and is capable of handling bandwidths of 600+ Mb/s. The reason this bandwidth has thus far remained unused is that when phone networks were devised, they were used to carry voice only. POTS uses an analog signal — a complex waveform — and reduces the bandwidth required by limiting the frequency response of the line to about 3400Hz. This is in the upper mid range of the human voice, and as a result, ordinary copper lines only use a fraction of the frequency spectrum that they are capable of.

Essentially, DSL employs this unused frequency spectrum from 4KHz and up, while voice and dialup modems use the spectrum under 4KHz.

Special favours come in 31 flavours

The most common domestic form of DSL is ADSL or Asymmetric DSL (also known as Full-rate ADSL) — it's called 'asymmetric' because the downstream speed is greater than the upstream speed. This works on the premise that domestic customers will download more information than they upload. ADSL can provide a maximum of 8Mb/s at up to 1.8km from an exchange. There are also several other flavours of DSL of interest to domestic users:

- Multirate Symmetric DSL (MSDSL) — This is Symmetric DSL that's capable of more than one transfer rate. The service provider can alter the data rate according to its own pricing plans.
- Rate Adaptive DSL (RADSL) — This is a variation of ADSL in which the

modem varies the speed of the connection depending on the quality of the line and the distance from the provider

- Universal DSL, (or G.Lite) — A new, emerging form of ADSL which doesn't require a splitter box and can run at greater distances than VDSL. The trade-off is a maximum speed of 1.5Mb/s

For business users there are several other options:

- High bit-rate DSL (HDSL) — HDSL provides transfer rates of about 1.5Mb/s, and is the most mature form of xDSL. Like SDSL, it sends and receives data at the same speed, but it requires two dedicated lines in addition to your normal phone line.
- Symmetric DSL (SDSL) — As the name suggests, Symmetric DSL sends and receives data at the same speed. It also requires a dedicated phone line and tends to be more expensive than ADSL. As such, it is best suited for Web site hosting and servers.
- Very high bit-rate DSL (VDSL) — An extremely fast connection, VDSL is asymmetric, but only works over a short distance (1.5km).

Users at the extremes of a DSL connection will see significantly slower speeds than their friends who live closer to the exchange. Their friends, in turn, may see higher than expected speeds.

DSL can only work on an analog line, so if your signal path includes fibre-optic cable, you're out of luck. DSL cannot pass through digital-analog converters, such as those used by Foxtel and Optus in their cable networks. But then again, who'd need ADSL when you could have a cable modem anyway!

Analog telephone networks use amplifiers called loading coils to amplify the signal along the network. These are typically installed every three kilometres. The only problem is that xDSL won't work if loading coils lie between you and the exchange. This is primarily because loading coils are designed to both boost and flatten the frequency response of the signal to 4kHz. Since DSL uses the frequency spectrum above 4kHz, loading coils thereby eliminate the signal. Loading coils are less of a problem than they used to be, as they are usually removed in the process of making an exchange 'DSL-ready'. Bridge taps are another potential impediment to accessing DSL. They are used to extend services to other customers and can sometimes extend the total distance between you and the exchange. It's not about how far you are from the exchange as the crow flies, but how the network is run.

Forceps. . . scissors. . .

ADSL uses two pieces of equipment: a transceiver (modem) at the customer's end and a DSL access multiplexer (DSLAM) at the provider's end.

A transceiver, or ADSL Transceiver Unit — Remote (ATUR) sends and receives signals from the user's computer, while the DSLAM combines the signals from multiple customers into a single, POP connection. DSLAMs are usually able to support multiple types of DSL, and as a result they are compatible with further technologies. There are two different methods used to separate the xDSL signal from the POTS signal: a splitter box used to divide the signal between the

BELOW: A comparison of the different types of DSL and their features:

DSL Type	Max download speed	Max upload speed	Max distance from exchange	Dedicated line needed?
ADSL	8Mb/s	800Kb/s	5.5km	No
G.Lite	1.5Mb/s	512Kb/s	6.7km	No
HDSL	1.54Mb/s	1.54Mb/s	3.65km	Yes (x2)
MSDSL	2Mb/s	2Mb/s	8.8km	Yes
RADSL	7Mb/s	1Mb/s	5.5km	No
SDSL	2.3Mb/s	2.3Mb/s	6.7km	Yes
VDSL	52Mb/s	16Mb/s	1.2km	No

transceiver and the voice line; or Low Pass Filters on each extension in the house to filter out the signals above 4kHz. Telstra's ADSL uses the second method on most residential installations, due to the high cost of installing a splitter box. As the speed increases, the likelihood of cross talk also increases, and this is why it is necessary to dedicate a line to faster DSL connections so as to reduce the risk of interference with a voice line.

CAP or DMT?

There are two competing standards of ADSL: the most popular is discrete multitone, or DMT; the other being Carrierless Amplitude/Phase, or CAP.

DMT divides the data into 247 separate channels, each 4kHz wide. It works in a similar way to cordless phones: if one data channel has problems, it then chooses from one of the other 246 options. A single session may use several different channels depending on line quality, number of users and line length. The lower frequencies from 8KHz and above are bi-directional, as they carry both upstream and downstream data.

Instead of 247 discrete channels, CAP uses only three: a discrete voice channel of 0 – 4kHz; an upstream band between 25 and 160kHz; and a downstream band from 240kHz and up to 1.5MHz. As a result, CAP is much easier to implement than DMT, but is also more susceptible to adverse line conditions. DMT is more prevalent due to its ability to adapt to differing line conditions, and it's the standard Telstra currently uses.

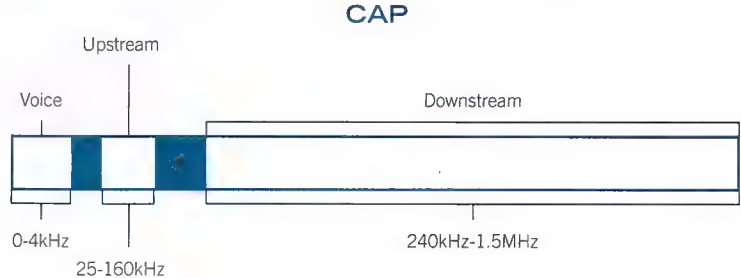
Cable versus ADSL versus satellite

So how does ADSL compare to a cable modem? Essentially, the only difference is the transfer method between the user and the ISP. Both are digital transfer methods, however one uses an analog line, and the other digital.

Cable modems only have a set amount of bandwidth available to a certain area, and so the more users added, the less bandwidth is available to each person. DSL is different in that each user has its own line, and so the bandwidth is only restricted by the type of DSL used. Of course, ADSL and cable aren't the only options available: satellite is another technology, which, if you're willing to invest in a satellite dish, is available to just about everyone. However, there are some problems with it: satellite can be susceptible to adverse weather conditions and the upstream leg requires a normal modem connected to your phone line.

Until 1 March 2002, there was a marked difference between the cable services provided by Optus and Telstra. Telstra capped its download speed at a maximum of 512Kb/s, and had a download limit of 3 Gigabytes. Telstra has since scrapped its download speed limit, which has made it more competitive with Optus. In comparison, Telstra DSL is more akin to the pre-1 March cable service.

It is impossible to discuss DSL without any mention of Telstra. Any DSL provider now or in the future will need its help, as it owns the only national copper-pair



ABOVE: CAP, or Carrierless Amplitude/Phase, is an older ADSL standard which divides the spectrum into three bands: a voice channel up to 4kHz; an upload channel between 25 and 160kHz; and a download channel from 240kHz upwards. It is one of two competing standards for ADSL transmission.

network. There has been a great deal of publicity about the problems associated with ADSL, but is this due to good old fashioned Telstra bashing or are there legitimate problems with the technology? Telstra retail public affairs manager, Kerrina Lawrence, says customers who currently have access to both technologies would rather use ADSL due to the convenience of using an existing phone line, and the ease of installation. In the past, Telstra has blamed the Nortel Networks infrastructure used to run its ADSL network. But Lawrence denies there is any 'bad blood' between the companies: 'We've had a lot of concerns about software glitches, and we're working with our providers to overcome them', she says.

Last year, there were two major outages affecting all users of ADSL in February and June/July. The last outage saw all users receiving two months of free Internet access. Lawrence says a lot of the problems were related to software, and many of them have now been ironed out. She says Telstra's problems were consistent with those experienced overseas, as ADSL is still a maturing technology.

In September and December, Telstra performed several upgrades of its software, which it says has ensured greater stability. It now has the infrastructure ready to cope with up to one million ADSL users.

In March last year, there were fewer than 6,000 DSL users in Australia. Research firm IDC estimated there would be 2.1 million DSL subscribers by 2004, while cable modem users would hit 520,000. Lawrence says that across three technologies — satellite, cable and DSL — it has over 100,000 broadband customers, with some sources suggesting up to 35,000 current DSL users.

Telstra has made a commitment to make either cable or ADSL available to 90 per cent of the population by the end of this year, while DSL is currently available to 65 per cent of Australian homes.

There are approximately two dozen providers nationwide who supply ADSL services — Telstra currently provides wholesale DSL to 22 companies who on-sell to their customers, with others such as RequestDSL installing their own DSLAMs.

In comparison, there are hundreds of ISPs offering dialup services. This is partly due to the robust nature of the v.90 56 Kbps modem standard. It has made dialup access available to a large proportion of people at minimal cost. One problem that faces most current cable and DSL users, however, is that if they choose to disconnect their service, they are then lumped with a next-to-useless modem. This is because most providers use their own proprietary software and modems. A new provider usually means a new modem and a one to two year contract.

With a definitive standard, such as D.Lite, ADSL users could pick and choose providers and also purchase modems independently. While this may not be good news for the providers, this is certainly an advantage for consumers. It would lead to reduced startup and ongoing costs, and would make ADSL more attractive to a larger number of customers.

VMware vs Win4Lin

Want it both ways? Ashton Mills dons his 'P3n6u1n h4x0r' t-shirt and taps into the power of emulation.

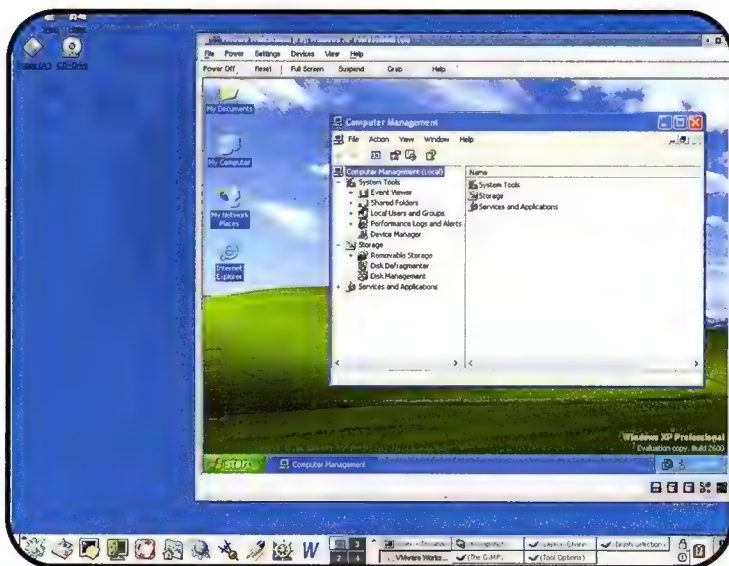
Linux, for all of its sexiness, doesn't cut it for many as the best desktop operating system for one simple reason: application support. Not in the sense of having loads of applications available to do the tasks you want, or in having the best applications for a task. Linux distributions come with more programs than you're ever likely to need, and many of them equal or excel their Windows counterparts. What it's really about is having those applications unique to the Windows platform and those you've come to know and love available under Linux. If Word is your favourite word processor, do you really want to learn a new one under Linux?

For quite some time Linux has been able to run some Windows programs through a handy open source project called Wine. Wine is not so much an emulator as a 'Windows compatibility layer' and is a remarkable piece of engineering: it'll run Windows programs *natively* on the Linux desktop, without the need to have a copy of Windows installed on the system. The Wine team has reverse-engineered Windows DLL files and built its own from scratch. But Wine is still under development, and doesn't run all Windows programs. While some work flawlessly, many don't. It can't be relied upon as a solution to running Windows programs under Linux. Enter emulation. VMware and Win4Lin are two commercial emulator products that allow you to run Windows, and thus Windows applications, right on your Linux desktop. It's not as nifty as Wine because you need to install a copy of Windows into the environment created by the emulator, but it does mean most Windows programs will work as is, because if Windows works, then its programs will.

Both products are to be admired for the technology involved. Firstly for achieving the goal of successfully creating an alternative PC environment, and secondly for the way in which each approaches the problem of getting Windows to run happily on top of Linux.

The whole enchilada

VMware has taken the approach of emulating an entire PC so as to provide operating systems with every resource expected. This is no easy task. You have to completely create all the resources a program or



ABOVE: VMware: Bringing Windows XP to a Linux desktop near you.

operating system expects to see, while keeping on good terms with the operating system on which the emulator is running. When there's only one of everything to go around in respect to system resources, it's tricky to get two machines — the real and the virtual — to play nicely together. But this is exactly what VMware has accomplished.

In fact, VMware will run a variety of operating systems besides Windows, including Linux itself. So yes, if you're perverse or just want to impress your pals, you can run Linux in a self-contained window on your Linux desktop. Such a display of sheer geek power will send them into fits of awe and praise.

As a side benefit, thanks to VMware creating container files that represent the hard drives of the virtual machine, it's possible to transfer an entire Windows installation and all of its applications from computer to computer by just copying the container file. As VMware is a set environment, the Windows installation will run fine on any VMware equipped machine, regardless of the hardware setup. This feature of mounting container files as drives also means it's possible to mount ISO images as CD-ROMs within the emulator, with no need to burn a CD.

VMware has also released a version of the emulator for NT based systems, so you can install Linux or Windows on your Windows desktop too. Why would anyone want to do this? The possibilities of a fully functioning desktop virtual machine are many. Programmers can code cross platform programs and test on multiple platforms without leaving their seats or rebooting. Tech support personnel can deal with, for example, multiple versions of Windows on the one machine, and still take advantage of remote support features through a network. And for the media it's a godsend when it comes to taking screenshots. How do you think we get those screenies of operating systems in the process of installing?

But such power over the forces of computing comes at a price. VMware will create a vast and eerie void in your wallet, and you will find the virtual machine running under par for your system, as there is plenty of overhead in virtualising a PC. Dual-CPU systems will have the real power here: you can literally run Linux off one CPU while VMware is tossed off to the other. How cool is that? Windows and Linux, each running on its own CPU, side by side on the same desktop. Damn, I think I'm going to have to change my pants now.

Just the fries, thanks

Win4Lin takes a different approach: if all you want to run is Windows, then emulating an entire PC is overkill: why not emulate *just* the services Windows expects to find?

And so Win4Lin emulates a perfect DOS environment. The Windows 95 and Windows 98 series all run on top of DOS, so bar a little tweaking to support networking and sound, that's pretty much what Win4Lin does.

This means two things: firstly, it's an insanely fast emulator: Windows 98 runs in Win4Lin as fast as it does on a bare system. If you have an SMP system, then Win4Lin can take advantage of this too, but you seriously don't need it. Secondly, because Win4Lin creates a DOS friendly environment, the Windows NT/2000/XP series cannot be installed. Not now, not ever. So for the die hard XP and Linux fans who prefer the price point of Win4Lin, your dreams of having these two kids playing nicely together isn't going to happen.

It's the trade-off: performance for compatibility. For the most part this is all you need — right now any program that runs on XP also runs on 98 — and with Linux as the underlying OS providing stability and performance, what else do you need?

Speaking of which, because Win4Lin installs Windows directly onto the Linux filesystem — no container file as with VMware — Windows gets to take advantage of the speed of the Linux filesystem and, moreover, copying files between the two 'machines' is simply a matter of copying files between directories. With VMware's container file, you need to set up network sharing within Windows to be able to share files between the real and virtual computers.

All you can eat

Both emulators provide a full networking environment for TCP/IP and Windows networking. In fact, once Windows is up and running there will be two IP addresses visible on the network — one for your Linux box and one for the Windows virtual machine. To anyone else on the network, these appear as two separate computers, because functionally this is exactly what they are.

On the downside both emulators require access to the kernel. VMware is easier here as it comes with source code to compile simple modules for whatever kernel version you have, and this is done for you during installation. Win4Lin, however, achieves some of its functionality and speed by interacting more closely with the kernel, and direct patching of the kernel source is required. Result: unless you download from Netraverse a pre-modified kernel or a patch to match your specific kernel for your distribution (if it's even supported), then you simply can't run Win4Lin. While they do support all popular distributions, if you're running a customised kernel chances are it won't work.

Also lacking is perhaps the most important feature of all: DirectX support. While it's there in limited form



ABOVE: Win4Lin: Windows and Linux at full speed on the same machine.

in both emulators, they were not designed to play games. Yes, yes I know, what were the developers thinking? What could be better than working in Linux and then starting up a Windows virtual machine to have a blast in Counter-Strike, all without rebooting your machine? For some reason VMware and Netraverse got it into their heads that there's money to be made targeting the corporate market. Pfft, I say!

So games aside, you really can be Linux-obsessed and have a personality at the same time. You need a bit more beef to get performance out of a VMware machine and more CPU grunt and RAM is required to virtualise a whole PC, but it'll run XP whereas Win4Lin will not. For performance, Win4Lin is ideal. For versatility, VMware.

But you know the most brilliant feature of these emulators? The instant wood factor that really does it for me? It's this: When Windows blesses me with a beautiful blue BSOD, I don't have to reboot. All that goes down is the virtual machine. A click on the VMware or Win4Lin icon, and a few seconds later Windows is up and running again like nothing ever happened.

This is the power of emulation at its finest.

Where to now?

What: VMware Workstation 3.0

Who: www.vmware.com

Min reqs: 300MHz CPU (700MHz recommended), 128MB RAM (256MB rec.)

How much: \$704.60 (regular) \$353.55 (academic) 30-day free trial available

Where: www.everythinglinux.com.au

What: Win4Lin 3.0 Desktop

Who: www.netraverse.com

Min reqs: 233MHz CPU (400MHz recommended), 64MB RAM (128MB rec.)

How much: \$149.95

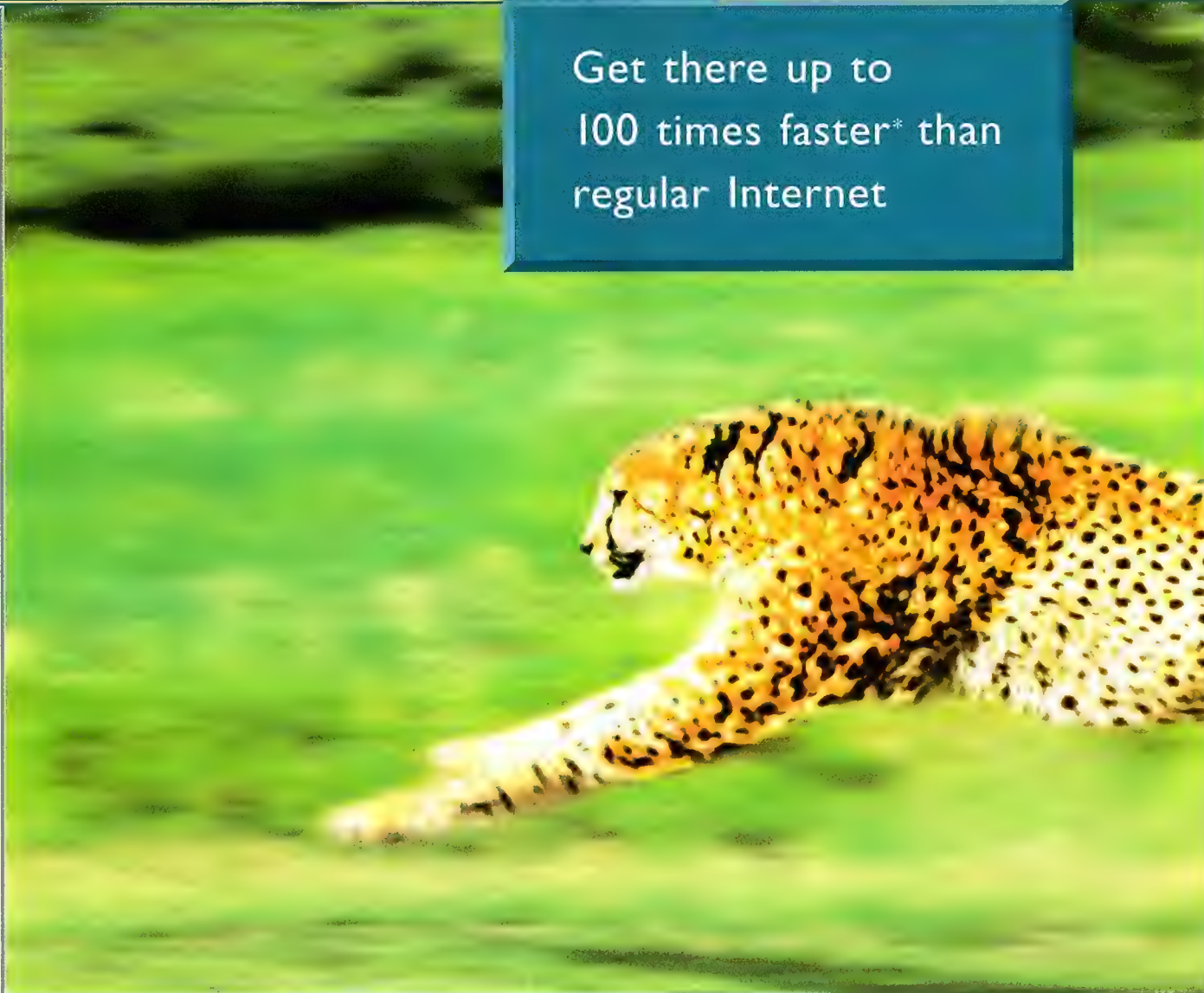
Where: www.everythinglinux.com.au

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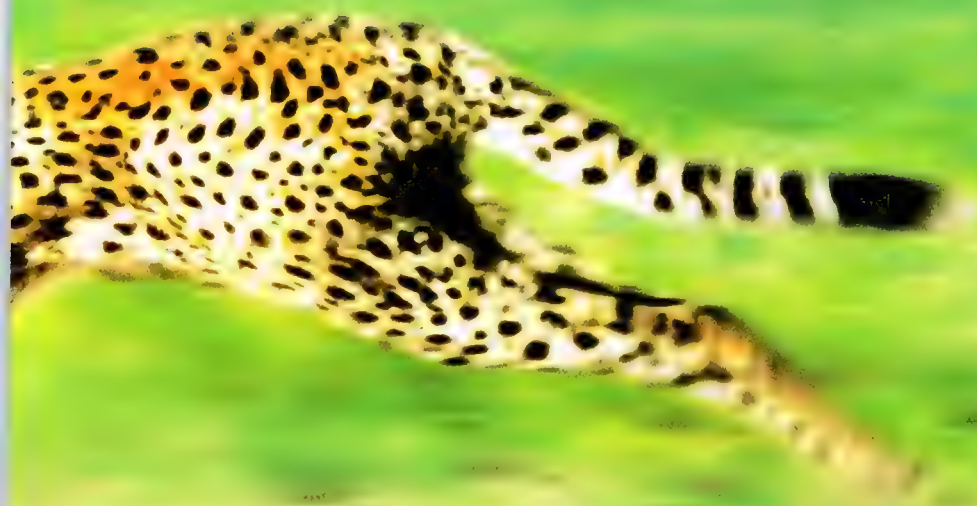
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X24543

Honey, I shrunk the computer

Remembering that the atom is his friend, John Simpson immerses himself in a sub-atomic fog to scope the future of super-downsized robots and other nanotech.

The year is 2056. You're home alone in your spartan apartment with nothing to do. Fortunately, you've just upgraded your 'nite cloud, and you think that tonight is a good opportunity to test its legs.

You instruct the cloud to disassemble your existing furniture, opting instead for a semi-tropical environment. As always, you're a little creeped-out as the sofa begins to morph into a moss-covered rock, so you leave the room to grab a snack. Part of the cloud follows you, responding to the cortical feedback strap around your head. While the kitchen table flashes messages from your 'mail account, the cloud uses some of the spare carbon dioxide in the room to assemble a cheeseburger. You insist on the full-fat isomer, knowing the anti-version tastes exactly the same. Anyway, the medi-bots in your arteries will clear any unsightly build-ups.

The lounge room is now ready, complete with rockpool and fog clinging to the soft underbrush. You assume (correctly) the 'nites have established a waterproof barrier under the floor, so Mrs Bourke downstairs doesn't get rained on. You sit on the mossy rock and switch on the air, the 'bots in your retina relaying tiny electrical impulses into your visual cortex. The world suddenly becomes the Amazon basin, and you're an army ant on the hunt for food. . .

Nanotechnology. It's been the staple of sci-fi for years, with nanites responsible for everything from intergalactic spaceships to rebuilding internal organs. Tiny machines that act with a hive mind, giving scriptwriters an easy scapegoat when plots become improbable.

Machines working on a molecular level is a hot topic around bunsen burners at the moment. Scientists are salivating over the growing potential for the technology, with breakthroughs in research constantly opening new ideas and possibilities.

Likewise, computer geeks are wetting themselves with anticipation. (Imagine this: a notebook with more processing power than the latest Compaq supercomputer in every pixel of its screen — no kidding.) More importantly, computer manufacturers realise there's a real imperative to getting nanotechnology to work, and quickly. It's estimated that within one or two decades, current chip manufacturing technology — silicon lithography — will hit a brick wall. Individual circuit strands of less than 0.01 micron in width will begin to fall prey to the weird effects of quantum physics. New ways to build transistors and wires will have to be developed, or the rapid advances of the past few decades will come to an abrupt, screeching halt. Nanotechnology looks like our last, best hope.

What is The Matrix?

Firstly, let's understand what we're dealing with. Referring to microchips as nanotechnology is a misnomer — by nanotechnology we mean very, VERY small (a nanometre is a billionth of a metre). Real nanomachines will be no bigger than a small cluster of atoms, with the atoms themselves only a few nanometres in diameter. If an atom were the size of a marble, an average nanomachine would be about the size of your fist.

On the atomic level the world is a soup of particles and strings, all zipping around trying to find a steady equilibrium. It's like Neo's vision from *The Matrix*: the bits twist and flow in a sub-atomic fog, all looking remarkably similar. Their arrangement and the way they interact is the only thing that determines their final physical properties.

Scientists have been dreaming about being able to re-arrange these particles for years. Back in 1957, the physics Nobel prize winner Dr Richard Feynman said: 'The principles of physics, as far as I can see, do not speak against the possibility of manoeuvring things atom by atom.' Scientists were very excited: it was like finding the Alchemist's Stone, where you could push around individual atoms to create any molecule you wanted. Suddenly, a new breed of science was born.

Being able to move atoms in circuits would leave existing chip manufacturing for dead — like comparing a bulldozer to a pair of tweezers. Atomic tools would enable the production of computer chips only nanometres across — the entire world's supply of computer chips, reduced to nanochips, would fit on the head of a pin.

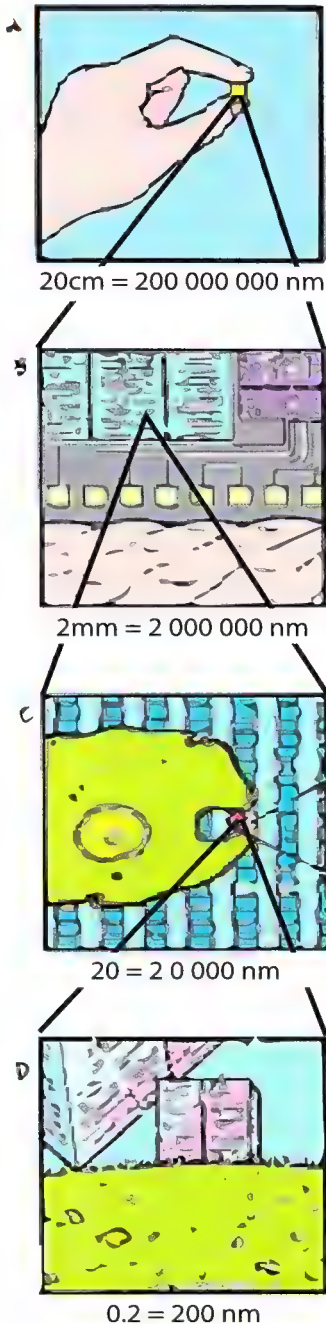
Amazingly, molecular rearranging is already happening. For

almost two decades, genetic engineers have been cutting and pasting molecules within DNA, the biological equivalent of your computer's bios. Using nature's molecular machines — enzymes — entire DNA strands have been modified with startling results. As one group of researchers demonstrated last year, swap one gene in a mouse for that of a fluorescent jellyfish, and you get a rodent that glows in the dark (great for parties and night-blind cats).

Nanomachines will tend to work in the same way as enzymes. Each enzyme has a very simple instruction set — either add or subtract. A single enzyme is fairly useless — but get a mass of enzymes working together, each with its own instruction set, and you have a very powerful molecular tool. In the same way, a single nanite would accomplish very little, but a bucket of nanomachines could carry out very complex tasks.

The inorganic hurdle

Enzymes are superb at what they do and are readily available (scientists usually borrow their enzymes from bacteria). Finding a similar 'cut and paste' nanomachine for inorganic systems is where the real problem begins: none exist in nature. Building synthetic nanomachines essentially means starting from scratch.

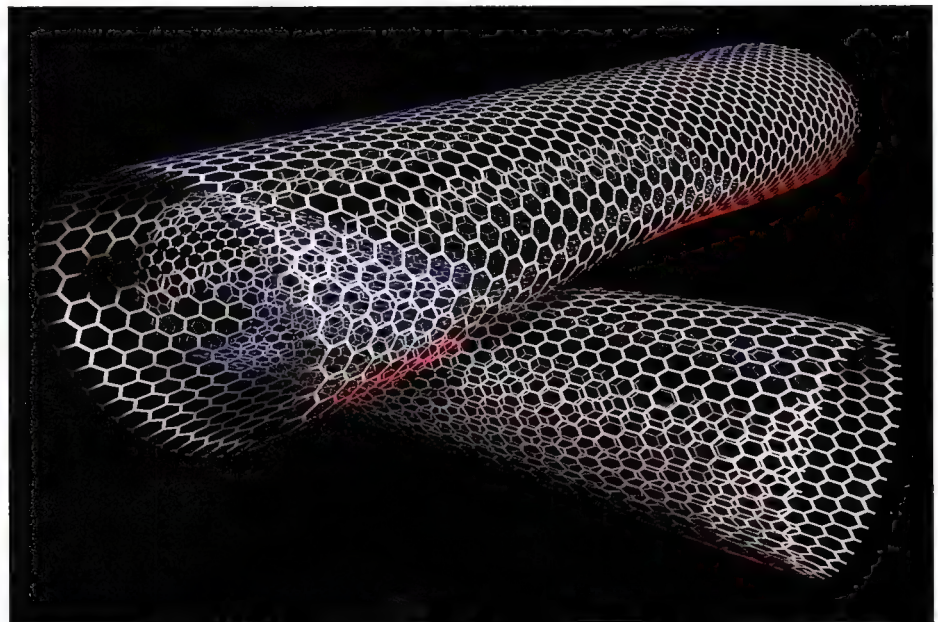


ABOVE: We measure current computer chips in millimetres. Future advances in technology will be measured in nanometres — sizes so small that even cells are massive in comparison.

Building nano-objects is extraordinarily difficult — not only because of their diminutive size, but also in the effort needed to find the right methods and materials. A huge amount of work has been done on the production of tiny nano-parts, with some of the most promising recently demonstrated by a team in Germany. Using a modified form of electrolysis, the scientists at the Fritz Haber Institute in Berlin were able to make three dimensional structures with an accuracy down to a few hundred nanometres(3). The process, where pulses of electrical current zap through an ion-rich solution, is ideal for creating circuits, cogs and levers for nanomachines.

Unfortunately, the speed of the electroplating process is much too slow to be commercially viable. But given time and further research, this may be one way to construct nano-sized computer components.

An alternative to electroplating involves 'growing' tiny tubes of carbon, lovingly referred to as nanotubes. These nanotubes act as electrical conductors, and it's possible to make the tubes so small that their walls are only a few atoms thick.



ABOVE: Carbon nanotubes, the nanowires of the future.

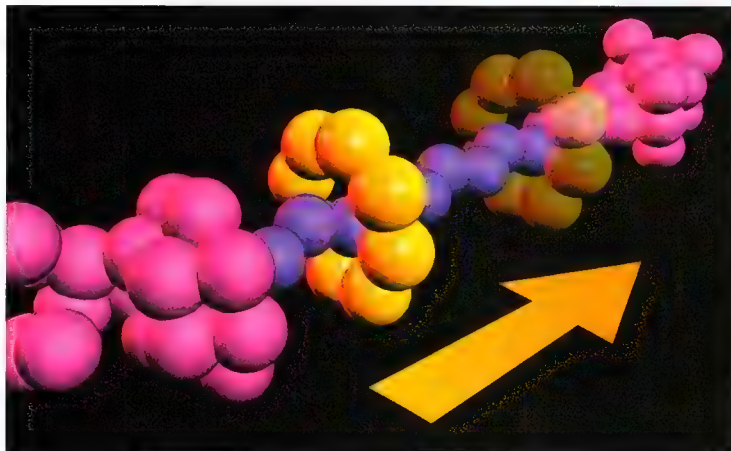
It's not only their size that has plenty of leading scientists excited: the tubes reportedly exhibit superconductor properties at room temperature (a superconductor can transmit electrical impulses with little or no electrical resistance). If this holds true, computers made with the nanotubes would potentially generate virtually no heat, operate at massively higher speeds, and would consume much less power.

Developing the techniques to successfully make the requisite components of the nanomachines and nanocircuitry is just the initial challenge: having them actually work together as a viable piece of machinery is another barrel of transistors altogether.

The incredible shrinking machine

So you assemble all your little parts into a tiny machine — a nanite — and suddenly hit your next hurdle: How do you power it? Can you switch it on and off easily? And how does the motor interact with the particles around it?

A recent breakthrough may have solved the first two problems. *Science* magazine last year(4) reported the development of a fast, photochemically-powered molecular motor that converts light into kinetic energy. Using a long molecule with knobs at each end, a 'shuttle' ring can be made to move along the molecule, then return to the start. Nothing too special. . . until you consider the speed at which it works. Previous light-driven nanoengines had taken from minutes to hours to fire-up — this version reacts almost instantaneously.



ABOVE: Researchers have developed a light-driven molecular motor. Shining laser light onto the 'shuttle motor' causes the ring to move from one end of the molecule to the other almost immediately. A molecular piston like this could power future nanomachines.

By grabbing molecules or clusters of atoms, the researchers believe the shuttle could 'fetch-and-carry' between specific locations, like a conveyor belt or a tiny little bicycle courier. With the correct holding tool in place, it's entirely in the realm of possibility that masses of shuttle engines could dismantle one structure, and then assemble another.

Fat and sticky

Like any new technology, there are a few bugs that will need to be fixed before we go gold. It may not be as easy as simply picking atoms up and dropping them down again, due to some quirky side-effects of working at the quantum level.

Nobelist Richard E. Smalley cited two big stumbling blocks — he called them 'fat fingers' and 'sticky fingers'(1).

The 'fat fingers' problem is that ordinary chemical reactions usually involve five to fifteen atoms, all bouncing around in three dimensional space. If you try and introduce a molecular tool into the works, there is a fair chance it won't fit very easily — like trying to thread a suitcase through a bicycle wheel while it's moving.

On top of that, the tool itself would have its own atomic properties — hence the 'sticky fingers' problem. Picking up an atom using the tool might work, but you may not be able to put it down again: the tool would attract the atom like a magnet. Letting it go in just the right place would be like trying to sew while wearing boxing gloves.

Related to this is a particularly nasty phenomenon — the Casimir effect — predicted in 1948 by the Dutch physicist Hendrik Casimir. In a weird twist of quantum behaviour, Casimir calculated that if you bring two objects so close together that only photons can fit between them, the objects will invariably close the gap by themselves — sometimes with great force. The effect was successfully demonstrated in 1996(5): scientists discovered that, rather than a problem of atomic attraction, it turned out to be one of *pressure*. With a lower number of particles between the objects than around them, a *low pressure area* forms in the gap. Both objects get sucked together — not very conducive for fine movements!



ABOVE: The Casimir effect — two nanoparticles are irrevocably drawn together by uneven pressure — demonstrated by observing the movement of the nanoseesaw in relation to the gold sphere.

The 'Nite Cloud and other predictions

Assuming we can overcome these difficulties — and there's little doubt we will — there's virtually no limit to the possibilities for nanotechnology. Imagine we had a crystal ball and could see nanotech's advances — gazing into our ball, the future might look something like this:

In the next few years we can expect amazing advances in materials, such as polymer-based paints and coatings that contain tiny ceramic particles to defy scratching and corrosion. New batteries that use iron-polymer combinations will generate twice as much power as before. Metal-composite car-body panels will simply pop back into shape after minor traffic accidents. And continued DNA work will identify and highlight all known genetic abnormalities within our biological codes, with doctors giving us print-outs we can show prospective partners.

Once nanotube and atomic electroplating become viable, the new age of electronics will begin. Pallets of millions of computer chips, about the size of a cornflake, will steadily crunch away on the problems of the world's resource allocation and the best sources of renewable energy. Interface devices will be so

sensitive to our body's electro-chemical signals that we won't need keyboards or mice — instead, a headstrap, glove and eyepiece will register all our input instantaneously. New apartments will be built using 'intelligent walls' that change colour depending on your mood, or go transparent when you want to improve the view.

As nanotechnology advances into self-propelled, autonomous machines, humankind will enter a new age of development. Self-replicating nanobots will be employed to scrub the atmosphere and soil, erasing years of neglect. Cellular rejuvenators will seek out defective areas within our bodies and replace them with new, error-free cells. Food production will move from the farm to the lab, where vast tubs of nanomachines will turn seawater into protein substrate, ready for texturing and flavouring. And with the world no longer constrained by material requirements, traditional economics will collapse, and the new unit of exchange will become human kindness and old *Star Wars* figurines.

The 'Nanite Cloud' referred to at the beginning of this article is the technology taken to its extremes: transparent mists of nanomachines suspended in the air, waiting for our command to start juggling sub-atomic particles. Possible maybe, but probable? At this point, we just don't know. We're standing at the foothill of a science that is shrouded in a fog of uncertainty. Leonardo DaVinci rightly predicted that one day there would be flying machines, but without a fundamental understanding of aerodynamics his own designs were inaccurate and unworkable. Nevertheless, his ideas gave other pioneers, like the Wright Brothers, a base to work from.

It's possible the current research into nanotechnology will miss the mark entirely. But, like DaVinci's vision, that work may open doors that will lead to developments that we can't possibly imagine. In any event, it's likely that one day — very soon — the word 'nanotechnology' will be associated with almost everything we do. □

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X Bits

Bennett Ring likes nothing more than to play with his joystick, making him the obvious choice for this mammoth roundup of Xbox goodies.

Did you know there's a new console called the Xbox available? Oh that's right, you've got a brain, which has turned a lovely shade of green and black after being inundated with Xbox advertisements. Now that this PC in disguise has hit the shelves, a plethora of things just begging to be jacked into it await your consumer dollar. We've taken a look at every Xbox peripheral device available at launch, just so you know what you need to get the perfect Xbox setup. All the major suppliers of Xbox peripherals in Australia were approached, but a couple chose to avoid our requests like a 10-year-old child avoids homework, and we can only wonder what they've got to hide. So if you can't see a certain product

range in our roundup, it's not because we didn't want to check it out.

To prevent information overload (hell, there are a lot of peripherals here) we've broken this roundup into four distinct categories, and each can be thought of as a mini head to head. Each device was thoroughly tested over a week of hard Xbox abuse, utilising the stellar titles *Dead Or Alive 3* and *RalliSport Challenge*. Hey, it's one hell of a nasty job, but someone has to do it.

STEERING WHEELS

Thrustmaster 360 Modena Racing Wheel

Pricer: \$149 Supplier: Guillemot www.guillemot.com.au



From our initial impressions of the Xbox, one genre that is going to excel on this platform is the racing game. And to get that true racing feeling, you're going to need a decent steering wheel and pedal set.

Thrustmaster doesn't have the greatest reputation for steering wheels, so we were intrigued as to how its new Xbox model would shape up. Our first complaint is the all-plastic construction — it feels as if this wheel was lifted from one of those plastic cars that you put toddlers in to keep them amused — as opposed to the cockpit of an F1 racer. Thankfully the lap mount works well, enabling the device to remain stable on your lap while you play from the comfort of your couch, without the need to rivet the base to your thighs.

Unfortunately the comfy lap mount is negated by the painful pedals, which exhibit the all too familiar 'foot in air syndrome'. You need to hold your feet mid-air over the pedals to use them, which becomes quite torturous after approximately 48 seconds. The pedal base also needs something heavy propped up against it to stop it sliding across the living room floor every time you jam the brakes on. A major flaw of the wheel is its lack of accuracy, which doesn't compare well to the Saitek Wheel. If there weren't any other wheels on the market, the Modena could have been an acceptable solution for your driving games. Unfortunately for Thrustmaster, there is also the Saitek wheel, which does everything so much better.



Saitek Adrenalin Wheel

Pricer: \$89 Supplier: Innovision www.innovision.com.au

The first thing you'll notice about this wheel is how nice it looks. Using the black and green Xbox colours combined with a chunky, futuristic look, it looks right at home plugged into your Xbox.

As soon as you plug it in, it becomes apparent that it's also a joy to use. The thicker steering wheel fills your hands nicely, while the rubber inlays help to get rid of the plastic feel which plagues the Thrustmaster wheel. Every button is within easy reach, while the gear paddles behind the wheel are perfectly positioned.

As for the pedals, the term 'floating on a cushion of cotton candy' is pretty appropriate. We've tested many different types of pedals over Atomic's history, but these are without a doubt the most comfortable pedals we've used. This is because they hang down from a raised centre point, as opposed to rising upwards from the base plate as they do in most other pedal sets. This means you can rest your foot on the base while using the pedals, allowing hours of use without even coming close to physical exertion — always a good thing for exercise phobic gamers. And because you are resting your feet on the base as you use the pedals, you don't need to worry about them scooting out from under your feet. Just like the Thrustmaster, this wheel comes with a lap mount. It's not quite as comfortable as the Thrustmaster mount, but it does the job.

When it comes to the actual job of steering, this wheel is very accurate, without any of the dead zone problems of the Thrustmaster. The wheel mechanism feels very smooth with only a hint of resistance, and auto centres once you've released it.

There were only two problems with this device worth mentioning. The first is the rumble effect, or lack of — you can barely feel them at all. The second was the alignment of the wheel: occasionally we'd boot up the Xbox to find that when the wheel was perfectly centred, our car would mysteriously begin turning. However a quick wiggle of the wheel rectified this problem every time.

Saitek should be commended for producing such a superior wheel. Considering the quality it's hard to believe it only costs \$90. If you're a fan of racing games, it's time to start saving for the Adrenalin Wheel.



THE CONTROLLERS

Saitek Adrenalin Pad

Price: \$59 **Supplier:** Innovision www.innovision.com.au

The first thing you'll notice about this pad is how much smaller it is compared to the Microsoft controller, which makes it very comfortable for those of us without spider fingers. It actually comes to close to a perfect fit — a rarity when it comes to control pads. Even the action buttons are more tightly grouped, making it simpler to reach all six than on the Microsoft controller. And then you notice the D-pad position: it's so far away from your hand that to reach it comfortably you'll need to dislocate your thumb. To make this controller even less appealing, both analog sticks have a very 'floaty' feel to them, being less accurate and responsive than any of the competition. The rumble features go some way to overcoming these massive shortfalls, being almost as nice as those of the Microsoft controller. But good rumble effects do not a decent controller maketh, so you'd better steer clear of this controller. Geddit, steer clear? Nyuk nyuk.



Microsoft Xbox Controller

Price: \$70 **Supplier:** Microsoft www.microsoft.com

If you camped out overnight and beat your way through screaming hordes of deranged gamers to purchase an Xbox, you'll already have one of these behemoths. Unless you got ripped off, that is. These oversized chunks of input meatiness rival only the old Atari Jaguar's controllers in size, which has been a complaint anywhere you can find an Xbox. Those not suffering from the condition of Gigantism will find that this controller feels nice at first, but cramping usually sets in after a couple of hours due to the extra wide controller handles. Other than this complaint, which is a pretty major one, this controller manages to do everything well. Both analog sticks and the D-Pad are within easy reach of your thumbs, although the action buttons are a little too widely spaced out. If you like things that vibrate (and who doesn't?) you'll love this pad. The rumble effects of this controller are easily the strongest and most realistic of all of the controllers. If only you could pull a 'Honey, I shrunk my controller' on this thing, because then it would be the perfect controller.

Which is exactly what Microsoft is doing in the yet to be released Controller-S, a human sized variant of the regular Microsoft Hulk Hogan-sized mega controller.



Pelican Accessories Trick Controller

Price: \$80 **Supplier:** All Interactive www.allinteractive.com.au

This controller stands out from the rest of the pack due its true programmability, allowing you to program combinations of button presses to a single button. In other words, you can cheat in fighting games by pre-programming that killer 'decapitating back flip into turkey stance' manoeuvre you've been struggling to master for months.

In terms of comfort, this controller is one of the better ones, as the reduced size makes it fit more comfortably within your trembling hands. OK, so only my hands tremble when I think of the Xbox. Unfortunately the trembling of my hands totally negated the weak rumble effects. If you can overlook the puke inducing colour scheme and are one of the pathetic breed who need to cheat to win, this could be the controller for you.



Japanese Xbox Controller

Price: \$99 **Supplier:** Game Infinity www.gameinfinity.com.au

As soon as this device slid into our palms, it was obvious that this is the perfect shape for a controller; in terms of comfort this controller is a very close second to those from Thrustmaster. It's a lot smaller than the American version, but still manages to jam just as many controls on the face. Due to its smaller size, the arrangement of the buttons is quite different to those of its Yankee cousin, unfortunately making it quite possible to accidentally hit them while using either of the analog sticks.

At \$99, the Japanese Xbox controller is quite expensive, but that's mostly due to the fact it has been specially imported into the country. However, for those who want to make sure all of their peripherals are authentic Microsoft gear, this controller can't be beaten.



Thrustmaster Firestorm

Price: \$60 **Supplier:** Guillemot www.guillemot.com.au

From the moment this gamepad and your hands meld into one, it becomes immediately apparent that this is the controller that you need to complete your Xbox setup. Due to their smaller size they are easily the most comfortable, with every button and controller within easy reach. A reassuringly solid feel suggests they'll endure years of frantic button bashing, which is very important for a device that is going to get a thorough workout on a regular basis. Both the analog sticks and D-pad feel perfect, giving a quick and accurate response. Heck, you can even re-assign the buttons, albeit one button at a time — no combo programming here folks.

If there is one flaw, it's that the rumble effects are a little weak. This is a small price to pay considering just how nice these pads are. Speaking of prices to pay, the Firestorm is even ten bucks cheaper than the inferior Xbox controller. Look no further, for these are controllers created for the intelligent Xbox gamer.



WEIRD ARSED PERIPHERALS

Thrustmaster Top Gun Fox 2 Pro

Pricer: \$100 Supplier: www.guillemot.com.au



Do you feel the need — the need for a flight joystick? Then the Top Gun Fox 2 Pro should suit your needs well. Fettooned with more buttons than an F-16 cockpit (almost), this beastie has enough for all but the most complicated of flight sims. It's even got a fully functional hat switch, something rare in console peripherals.

Rudder control is provided via the rotatable stick, while a sliding throttle control will show the twin Pratt & Whitney turbofans of your F-14 who's the boss. The large base makes this joystick comfortable to use from the comfort of your couch, necessary due to the couch-based habitat of the console gamer.

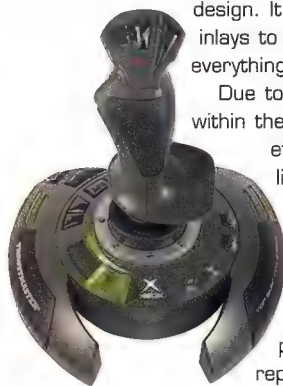
This controller is very comfortable to grip, thanks to the ergonomic design. It would have been nice to have a few rubber inlays to soften the feel up, but you can't always get everything you want.

Due to the rumble effects motor being placed within the stick part of this controller, the feedback effects are especially strong. If these are a little too strong, four different levels of vibrating effects allow you to select the level you find most comfortable.

The only complaint we've got about this joystick is that the stick itself feels a little stiff, which will no doubt ease after prolonged use. Thrustmaster has a great reputation when it comes to flight controllers, and it's easy to see why after having a bash with

this stick. In fact, because this stick is so fully featured, realistic flight simulations on the Xbox are now a possibility.

In fact, given the power of the Xbox, we wouldn't be at all surprised if a proper HOTAS setup is released in the near future alongside a true hardcore flight sim.



Thrustmaster Freestyler Board

Pricer: \$189 Supplier: [Guillemot www.guillemot.com.au](http://Guillemot.com.au)

Sometimes a device comes along that makes us shake our heads and ponder 'Why?'. The Freestyler is one such device. It sounds like a great idea, substituting the control pad with a funky mock snowboard for use with all those snowboarding games on the Xbox like Amped and, erm, Amped. But for it to succeed, it needs to be able to control the games as well as a standard controller, something this board definitely does not accomplish.

Even after loosening the bolts on the base, the Freestyler required calves of steel to tilt to the left or right. For muscle deficient gamers like us, this equalled extended bouts of pain. After some practice it became possible to steer our boarder down the slopes without mashing our face into too many trees, but pulling off tricks and combos was impossible.

The Freestyler might make an interesting conversation point at parties for drunken non-gamers to laugh about, but as a game controller it's quite simply woeful for anything that requires even a shred of accuracy.



AV PACKS

Microsoft DVD playback kit

Pricer: \$50 Supplier: Microsoft www.microsoft.com.au

Why do you need it? It's the only way to play DVDs on your Xbox.

To help keep the costs of the Xbox down DVD functionality isn't enabled in the Xbox unless you buy this pack. This is due to the costs associated with a suitable DVD codec to be used for all your DVD decoding.

Setting up the DVD playback kit is a breeze: simply plug the infrared button into one of your empty controller ports and play away. The remote is of the chunky proportions we've come to expect from anything Microsoft is manufacturing for the Xbox, and incorporates all of the controls you need. It's unfortunate that the Xbox doesn't sell with DVD functionality already included, but \$50 isn't a huge price to pay.

We noticed a problem when playing DVDs on the Xbox, as a movie started pausing and jumping towards the end of the disk. Yet after leaving the Xbox switched off for 10 minutes it played fine. We hope it's the disk that was the problem, and not the fault of an el cheapo DVD drive,



Microsoft Standard AV pack

Pricer: \$30 Supplier: Microsoft www.microsoft.com.au

Why do you need it? You destroyed the AV pack that came with your Xbox. Idiot.

This is the standard RCA composite output pack included with the Xbox. As such, it has the standard video and left/right audio outputs, all of which are gold plated to keep the signal nice and clean, resulting in crisper video and audio. It also has the same

problem of the stereo and video cables joining too close together, which will lead to many buying extension cables. If you manage to look after the original AV pack that came with your Xbox you'll never need to spend the \$30 for this replacement kit.



Microsoft RF Adaptor

Pricer: \$30 **Supplier:** Microsoft www.microsoft.com.au **VERSUS**

Thrustmaster RF adaptor

Pricer: \$30 **Supplier:** Guillemot www.guillemot.com.au

Why do you need it? Your TV is ancient and doesn't have RCA inputs.

If you purchased your TV from Fred Flintstone, it probably doesn't have RCA inputs, in which case you'll need one of these RF adaptors. After testing both of these devices, we found the quality of the picture to be identical. It's not as clear as the standard RCA pack, but it isn't far off.

Considering they're both the same price, you'd think either would suit your needs, right? Wrong. While the Microsoft adaptor uses the standard PAL connection to pass your TV antennae through the unit, the Thrustmaster uses an SMA (small modular adaptor) antennae connection. Considering that antennas with this type of connection are relatively rare, you'll have to buy an SMA-to-PAL adaptor to hook up your antenna. We're guessing that the SMA connection is

the most popular type of connection overseas, but it makes the Thrustmaster inconvenient for Australian buyers. Because of this poor choice in plugs, we've got no choice but to recommend the Microsoft RF adaptor over the Thrustmaster unit.



Thrustmaster S-Video and AV pack

Pricer: \$30 **Supplier:** Guillemot www.guillemot.com.au **VERSUS**

Pelican Accessories S-Video and AV pack

Pricer: \$35 **Supplier:** All Interactive www.allinteractive.com.au

Why do you need it? You want to use an S-Video input on your television, with standard stereo RCA sound connections.

Both of these packs are virtually identical, comprising of an S-Video output alongside the standard RCA connections, all of which are gold plated. A common complaint, which holds true for every AV pack featured in this roundup, is that the audio and video cables are very short and originate from a longer main cable. This means that if your video and audio inputs for your TV and sound system are far apart, you're going to have to buy an extension cable for either your audio or your video. It's amazing to see that this idiotic design flaw holds true for every single AV pack we tested.

Both packs gave identical picture and audio quality, which leads us to recommend the cheaper Thrustmaster pack over the Pelican pack, even though the Pelican pack uses spiffy translucent cabling. And yes, S-Video does give superior picture quality than the RCA connection, but you're going to need a TV that supports it.



Microsoft Advanced AV pack

Pricer: \$40 **Supplier:** Microsoft www.microsoft.com.au

Why do you need it? You need Dolby Digital sound output, while connecting to a standard RCA or S-Video input.

We couldn't believe it when we discovered the Xbox doesn't have a built-in Dolby Digital output, especially considering how much the Xbox's Dolby Digital support has been pimped. So to hook it up to the crankin' new Dolby decoder you just sold your soul for, you'll be needing this

pack. However, your Decoder must utilise a Dolby optical input, not SPDIF, which is a very surprising omission. Likewise, to hook your Xbox up via S-Video for a clearer picture than that offered by both RF and

RCA connections, you'll need this pack. If you just want S-Video without Dolby Digital, you're better off with either the Thrustmaster High Definition pack or the Pelican S-Video pack, which are cheaper.



Microsoft High Definition AV Pack

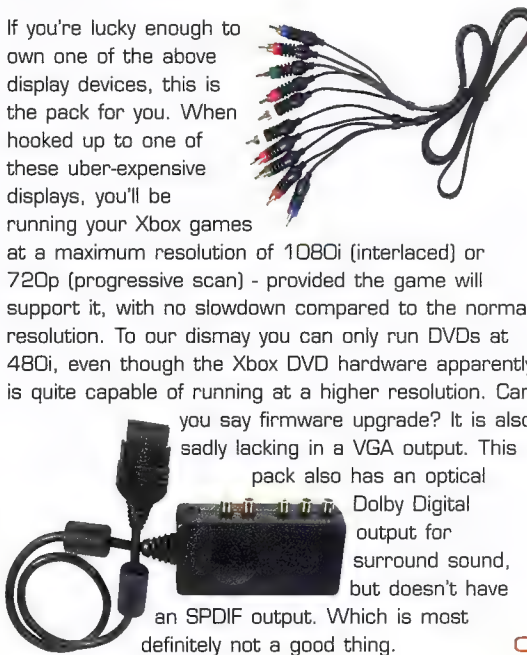
Pricer: \$40 **Supplier:** Microsoft www.microsoft.com.au

Why do you need it? You're filthy rich and want to hook your Xbox up to a projector, HDTV or other high resolution display device with composite inputs, as well as a Dolby Decoder.

If you're lucky enough to own one of the above display devices, this is the pack for you. When hooked up to one of these uber-expensive displays, you'll be running your Xbox games

at a maximum resolution of 1080i (interlaced) or 720p (progressive scan) - provided the game will support it, with no slowdown compared to the normal resolution. To our dismay you can only run DVDs at 480i, even though the Xbox DVD hardware apparently is quite capable of running at a higher resolution. Can

you say firmware upgrade? It is also sadly lacking in a VGA output. This pack also has an optical Dolby Digital output for surround sound, but doesn't have an SPDIF output. Which is most definitely not a good thing.



Behold the power of the atom



Vapochill-out, dude, be cool

In the beginning, there was steel. The steel was beige and we thought that it was good.

Then Aluminium cast its light upon the faces of the geeks, and they merrily did woot.

[Deep bass rumble] Then there was Vapochill and OMFG how good is this?!

We gave one of these beastly babies away a few issues ago and now we've scored another one. Too bloody good.

Worth almost TWO GRAND, the Vapochill Socket A/Socket 370 PC case features built-in liquid cooling. Your CPU will be frosty fast, your hot spinny bits blissfully cool and all in peaceful quiet! It would not be an understatement to say PC cases don't get any better than this.

Special bonus good luck chance alert: Hey, if you somehow manage to win the Athlon + motherboard on the comps page, then you're home and hosed!

New: Gift subscriptions now available online @ www.atomicmpc.com.au & www.atomicmpc.com.nz

Atomic 14 Xbox games winners: M Biboudis, Rose Bay NSW, S Graham, Clarence Gardens SA, M McCrackle Barcald QLD, S Milloy Blacktown NSW, L Natrass, Mt Claremont WA, O Hunt, Christchurch NZ, B Seabourne, Inglewood WA.

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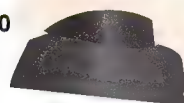
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02

CONTROL YOURSELF

STU-ART



REVIEWS



Keyboard, how I love thee

This month Bennett Ring looks at the history of our beloved mouse and keyboard combination.



You might have noticed this month's Atomic features quite a few control devices. While many people overlook the importance of these peripherals, it's significant that they're the final link in the human/machine interface. Without a decent controller, it doesn't matter how fast your machine's framerates are, or whether you can run at a resolution of 1600 x 1200, because if your controller sucks you're just not going to be immersed in the game world.

While the rest of the PC's hardware has continued to evolve at an amazing rate, the humble keyboard and mouse have stayed remarkably close to their original designs. When you find out just how old these designs are it's even more astounding to see that they are still very close to their origins.

First up the keyboard. As you'd all know, that device which you use to bash out flame war posts and control your movement within first person shooters is based around the QWERTY typewriter. But did you realise that this keyboard layout dates all the way back to the 1860s, making it over 130 years old, without a single change in the order of the keys? This design was used in the first mass produced keyboard in 1874, in Remington's (yes the company famous for making things that go bang) first typewriter. Sure, we've added a couple of dozen keys around the outside of the alphabet keys for computer specific tasks such as the numpad and the function and cursor keys, but the basic layout remains unchanged.

There's an urban myth that the QWERTY arrangement was used to slow down typing speeds, as fast typing caused these early machines to jam. But it was actually to do with keeping the internals of the machine from jamming when common letter combinations were used, regardless of the speed at which text was typed, which in fact led to an increase in typing speeds. The shift key was added a few years later, named as such because it actually shifted the entire carriage within the typewriter.

To have lasted unchanged for over 130

years this must obviously be a great design, right? Unfortunately not, as there are other layouts that are proven to be more efficient than the QWERTY layout, with the most famous example being the Dvorak keyboard. This groups all of the most commonly used letters, such as the vowels, onto a single row with the less commonly used letters relegated to the outer rows of the keyboard.

So why do we continue to use the less efficient QWERTY layout? It all comes down to the fact that this was the first design in widespread production. As people learnt how to use this layout to touch type it became too difficult, due to training and re-equipping costs, to change to a more efficient design. So we've been stuck with something that does the job, but not as well as it could. We even still call our Shift keys the same name, even though they no longer physically shift the device we're typing on.

It just goes to show that when a device design gets a certain level of support and momentum behind it, it's hard to make the change to a newer version, even if it happens to be a superior design. It also shows that humans can be a lazy bunch; we'll settle for a device if it does the job, even if there are better ones out there.

The mouse is a much more recent invention. Created by Douglas C. Engelbart back in 1963 as a tool for navigating around a GUI, this too has changed very little from the initial design. Granted, the first mouse was carved from wood and only had one button, but the basic principle remains unchanged to this day.

Since then we've added a few more buttons and a wheel, and replaced the mechanical rollers with optical sensors, but other than some ergonomic stylings, we haven't changed its basic form and function.

Over the years we've seen a gamut of different input devices that have done their best to replace the trusty mouse and keyboard, ranging from head tracking units to gyroscopic pointers to keypad thingamajigs for first person shooters. And yet none of these have ever grabbed gamers by the gonads and screamed: 'Use me! I'm much better than your boring old nanna of a keyboard!'

So what is going to be the next big thing for game control? Will it be VR motion trackers, which use the positioning of our body parts as input, or will we someday attach the computer directly to our nervous system, foregoing any type of external sensor? To be honest I don't particularly care, as I'm more than happy with the current setup. One thing is for sure — the keyboard/mouse combination certainly beats the crap out of those console gamepads. . .



Atomic benchmarks

The Labs method to Atomic madness.

Here at Atomic it is our primary intention to give you the final word on the latest in hardware and PC technology. An integral part of determining the performance of a particular piece of hardware is benchmarking, and this is something we take very seriously in the Atomic Labs.

SYSMark2001

SYSMark is a product of the collaboration between industry group BAPCO (www.bapco.com) and MadOnion.com (www.madonion.com). It is the first of the next-generation application benchmarks and is designed to more accurately replicate the day-to-day workload that a system is subjected to. The benchmark focuses on Internet Content Creation and Office Productivity tasks in order to generate a final rating.

SiSoftware Sandra 2002 Professional

Sandra, from SiSoftware (www.sisoftware.co.uk), is a comprehensive benchmark and diagnostics utility. It contains dozens of special module applets that retrieve detailed information about the specifications and settings of a system, by polling each component's built-in firmware or BIOS. Sandra also features a small suite of synthetic benchmarks for specific components such as CPU, memory, CD-ROM and hard disk. It also features a burn-in wizard for stress-testing overclocked systems.

3DMark2000 Pro

3DMark2000 Pro from MadOnion.com is a powerful benchmark for testing Direct3D performance, and is the successor to the popular 3DMark99 MAX. Although it is a synthetic benchmark, it uses the advanced MAX-FX 3D engine from Max Payne, which is representative of the latest in Direct3D performance and technology.

3DMark2001 Pro

3DMark2001 Pro from MadOnion.com is the next progression of the popular benchmark utility. It also uses the MAX-FX engine and heavily emphasises DirectX 8.0 functions, including programmable shaders. The

results are not comparable with results from 3DMark2000 Pro.

HSF testing

To test HSFs, we use our Athlon XP test bed, which uses an internal temperature diode. SiSoft Sandra 2002 is run in looping burn in mode, with both CPU tests selected for 30 minutes before the load temperature is recorded. The CPU is then left to idle for 30 minutes before the idle temperature is taken.

Quake 3: Arena AtomicMPC Demo

Quake 3: Arena (Q3A), from id Software, is the very popular first person shooter representing the latest in OpenGL gaming technology. Q3A has a built-in benchmarking utility and built-in demos that can test graphics card performance. These demos are fairly simplistic, and are not representative of the worst conditions that the game can offer to a graphics card. So we developed our own AtomicMPC Demo that pushes the hardware as far as possible.

Other benchmarks

Sometimes we need to break down the tests into more specific areas, such as hard disk performance, or a particular facet of 3D like T&L or SSE. For these specific purposes we can draw on a vast number of applications, games and dedicated benchmarks such as CD Speed 99, DisplayMate, Dronez, MDK2, Adaptec ThreadMark, or Serious Sam. Whenever we use one of these special benchmarks we will outline the nature of the tests, the testing procedures and any settings we use.

Atomic testbench specs

Both systems are running Windows XP Professional with DirectX 8.0a, as well as the latest official NVIDIA drivers.

- AMD Athlon XP 1800+ system - ASUS A7V266 E motherboard (supplied by Cassa, www.cassa.com.au)
- Intel Pentium 4 2GHz - ABIT TH7 RAID motherboard (supplied by ABIT, www.abit.com.tw)

Common components

- Samsung 256MB PC2100 DDR-RAM (supplied by Cassa)
- Samsung 256MB PC800 RD-RAM (supplied by Cassa)
- Hercules Prophet II GTS 32MB (supplied by Guillemot, <http://au.hercules.com>)
- 20GB Ultra DMA/100 7,200rpm hard disk drive
- Hercules Prophet II GTS 32MB (Supplied by Guillemot, www.hercules.com)
- Sound Blaster Live! Player (Supplied by Creative Labs Australia, www.createlabs.com)
- ASUS 52X CD-ROM (supplied by Cassa)
- Belkin PCI FireWire card (supplied by Belkin, www.belkin.com.au)
- Belkin PCI USB 2.0 card (supplied by Belkin)

Benchmark settings

3DMark2000 Pro

- 1,024 x 768, 16-bit colour, 16-bit textures, 16-bit Z-buffer, triple frame buffer
- 1,024 x 768, 32-bit colour, 32-bit textures, 24-bit Z-buffer, triple frame buffer
- 1,600 x 1,200, 16-bit colour, 16-bit textures, 16-bit Z-buffer, triple frame buffer
- 1,600 x 1,200, 32-bit colour, 32-bit textures, 24-bit Z-buffer, triple frame buffer

Quake 3: Arena AtomicMPC Demo

All tests use Quake 3 1.27g

- CPU: 320 x 240, maximum geometry detail, minimum graphics settings, high sound quality
- Graphics cards: 640 x 480, normal quality graphics settings, high sound quality
- 1,024 x 768, maximum graphics settings, high sound quality
- 1,600 x 1,200, maximum graphics settings, high sound quality

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Koolance PC2-601

Dan Rutter gets on the case for some wet and wild PC action.



Water cooling interests some people because it's a much more efficient way to move heat away from overclocked chips than any mere heat sink and fan (HSF) combination.

Some people like the idea because it lets you replace small fast loud fans with large slow quiet ones, which is a big step along the road to silent computing Nirvana.

And water cooling appeals to a lot of people, of course, because studies prove that a water cooled PC, particularly one with a see-through side panel, makes you look seven times cooler than Fonzie when you set the thing up at a LAN party.

Koolance's PC2-601 should suit all three market segments.

It costs \$589 without a power supply, but for your money you get a good quality tower case with a dual pump reservoir, three-fan radiator and

show-off side window all pre-installed. The PC2-601 also comes with a neat CPU cooling water block suitable for Socket A, Socket 370 or Pentium 4 processors. Water blocks for other components, including hard drives, are optional extras.

The PC2-601 isn't a plug-and-go proposition, but it's better thought out and easier to handle than every other water cooling setup we've seen. It comes with a well-presented manual, covering pretty much everything you need to know to assemble, test and troubleshoot the system.

The manual's not perfect — it shows you how to attach a previous model of CPU water jacket, for instance — but the omissions are minor. It's no big deal to connect up the included PVC tubing, attach the solid little crimp-on cable clamps, and fill and test the system. The fill-and-drain hole is on the bottom of the case: you turn it upside-down to fill it.

Whether you're after silent computing or More Power, the PC2-601 can help you out, thanks to its 'Power Control Board', which has a temperature probe. The probe's on a long enough wire that you can stick it to your CPU and the radiator fan speed can thus be temperature controlled.

An LED display on the top of the case shows you the temperature of the probe. Next to the display are two indicator lights and two recessed buttons. One button just toggles the display between Celsius and Fahrenheit, but the other one lets you change the fan mode.

In mode 1, the three 80mm ball bearing fans stay at a very quiet 45% power level until the probe hits 45°C, at which point they go to full power. In mode 2, for somewhat more aggressive cooling, the fans ramp up from 45% to full power as the probe temperature rises from 35°C to 40°C. Mode 3, for the serious overclockers, leaves the fans on full power all the time.

We'll have to take Koolance's word for it that the pumps this system uses are reliable, as small 12 volt pumps like these ones aren't exactly renowned for managing terribly long continuous service, and serious water cooling systems usually have mains-powered pumps with much higher flow rates. The fact that the Koolance case has two pumps, though, means that either one can fail without causing a disaster.

Even if both pumps fail the PC2-601's unlikely to start generating smoky steam. The Power Control Board sits in the middle of the ATX power lead, which means it's able to turn the computer off if the thermal sensor reads 50°C or higher for more than 30 seconds.

The PC2-601 isn't the fanciest water cooling system we've seen — or the most powerful. But it is the most user-friendly and it can comfortably outperform even the most extreme, expensive and horribly noisy HSFs.

At \$589 without a power supply but including the CPU cooling kit, the PC2-601 isn't terribly expensive for what you get, especially when you consider what some of the Cooler Master cases are selling for. You're looking at about \$300 for a basic water cooling rig anyway, and a decent tower case without PSU will cost you around \$150. So the Koolance option gives you thermally controlled fans, emergency shutdown, a pre-installed radiator and reservoir, and a side window, for less than \$150 extra. Bargain!

SPECIFICATIONS

Tower PC case with built-in water cooling rig

Web site: www.koolance.com

Supplier: PC Case Gear www.pccasegear.com

Phone: PC Case Gear (03) 9572 3444

Price: \$589 with CPU cooling kit, but without power supply



ASUS L3C series

After many years notebooks stop sucking, and so does John Gillooly.



Intel's launch of the mobile Pentium 4 processor-m has resulted in a performance explosion in the notebook field. Thankfully it has coincided with 3D graphics chipset manufacturers delivering a range of new solutions. This combination of CPU and GPU power mean that the humble notebook finally has the

power to challenge desktop systems in the gaming stakes. For the mean time at least. . .

While NVIDIA's GeForce4 Go has been turning heads with blistering performance, ATI's mobility RADEON 7500 is also making headway in the notebook 3D stakes. When these graphics chips get strapped onto a Pentium4 powered motherboard there is huge performance potential. Last month we got a chance to play around with Dell's Inspiron 8200 notebook, which uses the GeForce4 Go 440 chipset, and it was impressive to say the least. This month we take a look at ASUS' L3C series notebook, which is almost identical in specification to the Inspiron 8200 except that it uses the mobility RADEON 7500 chipset.

Sporting a 1.7GHz mobile Pentium 4 processor-m, with 256MB DDR RAM, the L3C employs Intel's new i845M chipset. The mobility RADEON 7500 has 32MB of dedicated memory and also uses 24MB of shared memory. Feature wise, the L3C has the usual swag of options, with onboard Modem, Ethernet, IEEE 1394, USB, PCMCIA, S-Video TV out, Parallel and Serial ports. It also has a built in floppy drive, something that other notebook manufacturers are trying to get away from, but is a welcome addition for some users. Optical storage is via a combination DVD ROM / CD-R/W drive, and the unit also has a 40GB hard drive.

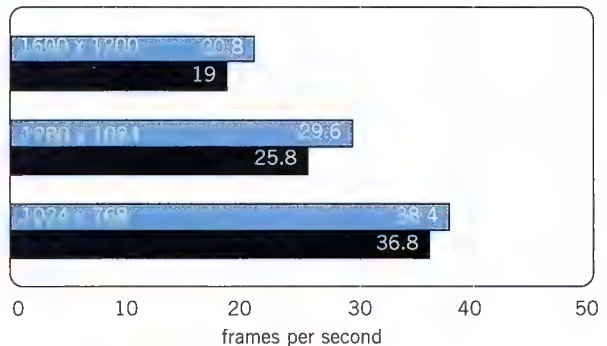
We tested the L3C with 3DMark2001SE Pro, Serious Sam: The Second Encounter Demo and SYSmark2001 Pro. The results were then compared to those of the Dell Inspiron 8200.

In 3DMark2001 SE Pro, the L3C lagged behind the Inspiron by 20 per cent and 800 x 600, rising to 28 per cent at 1280 x 1024. In the OpenGL based Serious Sam: SE Cooperative demo the gap disappeared, with the L3C pulling ahead of the Inspiron by four per cent at 1024 x 768 and peaking at 14 per cent faster at 1280 x 1024. Considering that the main difference between the two notebooks is the graphics chipset, the SYSmark2001 results are unsurprisingly close, with the overall result showing the L3C winning by four per cent.

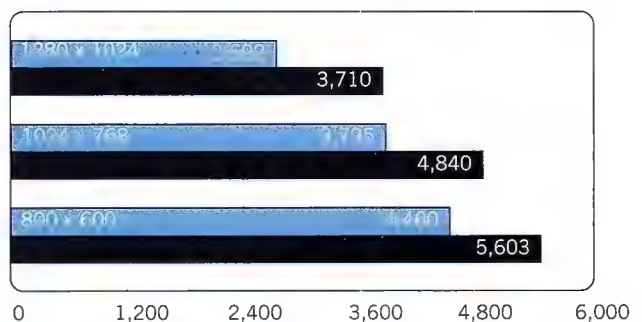
One can assume that the Direct3D performance will improve as ATI's drivers do, in which case the mobility RADEON 7500 will really give the GeForce 4 Go 440 chipset a serious run. In

the meantime, ASUS has delivered a notebook with fantastic performance that is equally at home in your office as it is helping you kick butt at your local LAN. ☐

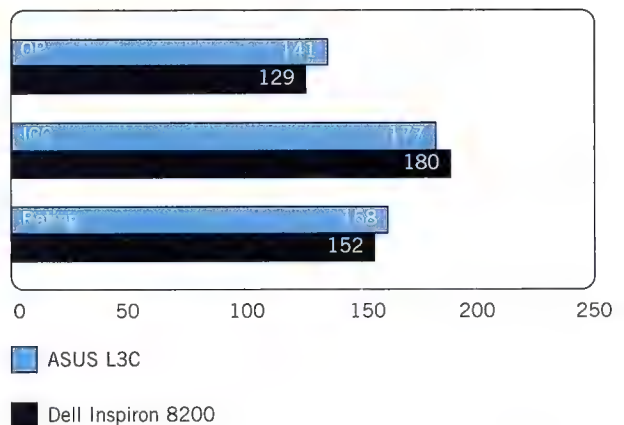
Serious Sam: SE Demo



3DMark2001SE Pro



SYSmark2001 Pro



SPECIFICATIONS

1.7GHz mobile Pentium 4, 32MB mobility RADEON 7500, 40GB HDD, DVD ROM/CD-R/W drive, 15 in screen.

Web site: Asus www.asus.com

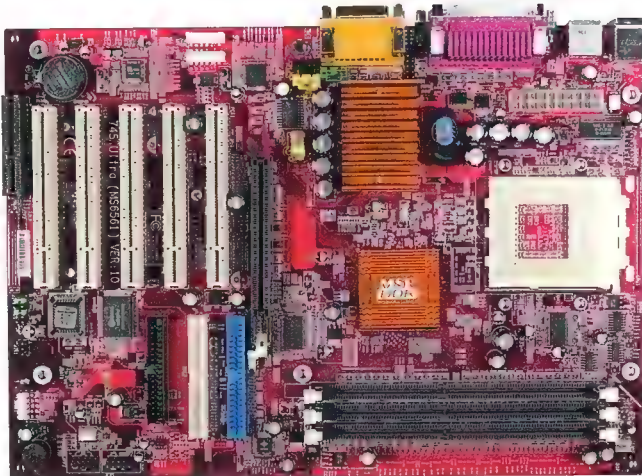
Supplier: CASSA www.cassa.com.au

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MSI 745 Ultra

The rogue DDR333 name strikes again and John Gillooly feels validated.



SiS was the first of the core logic chipset makers to deliver support for DDR333 DDR RAM in the form of the 645 and 745 chipsets. We have already seen a few examples of the Pentium 4 supporting SiS 645 in the Atomic labs, but MSI's 745 Ultra is the first example of the SiS 745 Athlon chipset to cross our path.

Unfortunately the same concerns about DDR333 chipsets still remain from last issue, when we looked into MSI's KT3 board using VIA's competing KT333 chipset. These concerns revolve around the single fact that at the time of writing the PC2700 specification still has not been finalised. Sure, SiS and VIA have put certification schemes into place for DDR333 modules, but who knows what the future will hold for this memory type. The distinction between PC2700 and DDR333 is deliberate. Without any official specifications VIA, SiS and some memory manufacturers are only using the term DDR333, whilst PC2700 refers to RAM based upon the final JEDEC specification, whenever that may surface.

Unlike VIA, SiS has a list of validated DDR modules up on its Web site already (www.sis.com/ddr/ddr333.htm) which is highly recommended reading for anyone who is in the market for a SiS chipset DDR board.

Thankfully, there should be no significant boost in performance over PC2100 DDR RAM when using DDR333 on Athlon systems, due to bottlenecking by the 133MHz (266MHz effective) FSB used by the current generation Athlon XP CPUs, so it would be advisable to stick with PC2100 DDR RAM for the near future.

Not your normal mobo

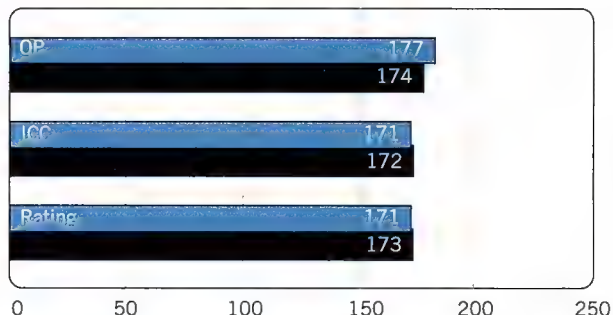
MSI's 745 Ultra has some significant layout differences from other Athlon motherboards on the market. This is largely due to SiS' single chip design for the 745. That's right: one chip only, not the Northbridge/Southbridge dual chip model used by the majority of chipset manufacturers. However, the most unusual feature we saw on the board is that the voltage regulation modules generate enough heat to require a large heatsink to be placed on them. Apart from these features, the board layout is fairly standard, with five PCI slots, three DIMM slots and

onboard audio.

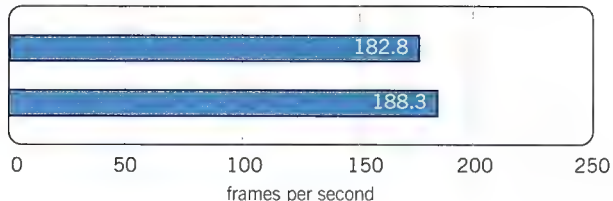
We tested the MSI 745 Ultra under Windows XP Professional using an Athlon XP 1800+ and 256MB of SiS-validated MPLB62D-68KX3 Kingmax DDR333 RAM. This was lined up against our ASUS A7V266-E testbench, using an Athlon XP 1800+ and 256MB of Samsung PC2100 DDR RAM. The boards were tested with Quake 3: Arena, SiSoft Sandra 2001 and SYSmark2001. Despite Sandra showing the 745 Ultra as clear leader in the memory bandwidth stakes, both Quake 3: Arena and SYSmark2001 showed that these theoretical results don't necessarily translate into real-world performance. In Quake 3: Arena the A7V266-E scraped ahead of the 745 Ultra by an insignificant three per cent, and in SYSmark2001 the results ranged between bugger all and two per cent.

These results show that the 745 Ultra can keep pace with the fast KT266A chipset, but clearly telegraph the fact that DDR333 is being held back by the Athlon XP's 133MHz FSB. There was hope that the imminent Thoroughbred cored Athlon XP processors would support a 166MHz FSB, however that sort of leap is still vacant from AMD's CPU roadmaps. Until that happens, the KT266A chipset with PC2100 DDR RAM remains the Athlon platform of choice for performance users.

SYSmark2001 Pro



Quake 3: Arena CPU (745 ultra)



■ MSI 745 Ultra
■ A7V266-E

SPECIFICATIONS

SiS 745 chipset, DDR333 support, five PCI slots, three DIMM slots, onboard audio.

Web site: MSI www.msicomputer.com.au

Supplier: MSI www.msicomputer.com.au

Phone: (02) 9748 0070 Price: \$199



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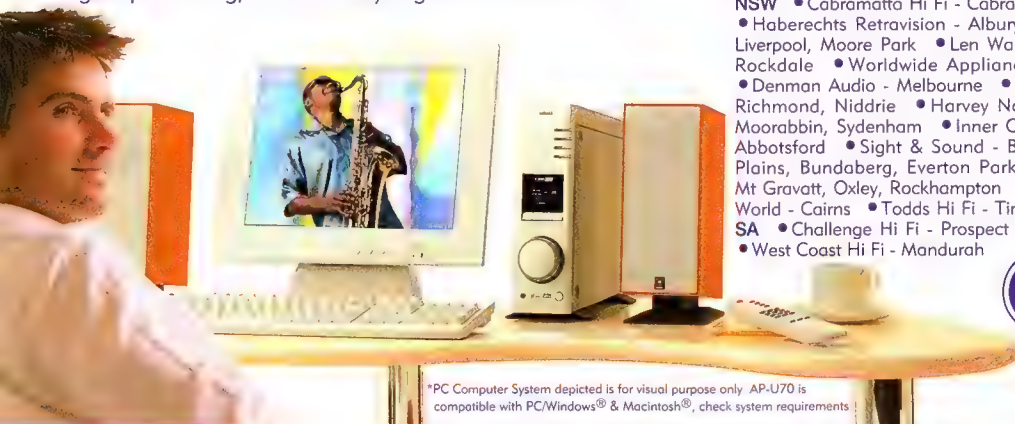
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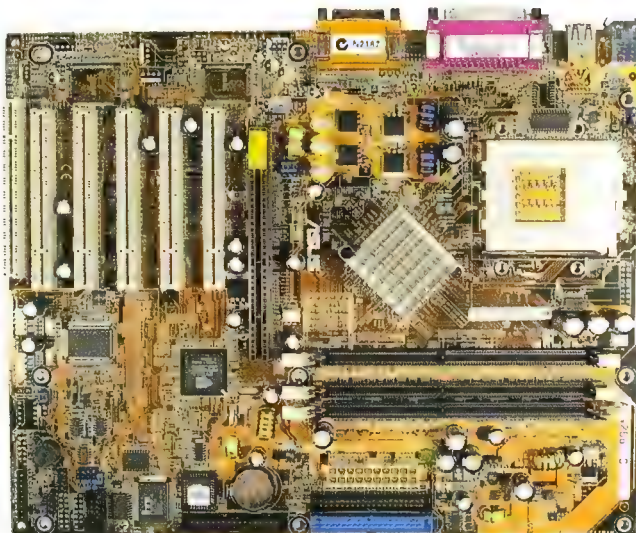
YAMAHA

www.global.yamaha.com

*PC Computer System depicted is for visual purpose only. AP-U70 is compatible with PC/Windows® & Macintosh®, check system requirements.

ASUS A7N266-C

John Gillyooly could never be board (sic. Mate!) by new chipsets.



When it was finally unveiled late last year, NVIDIA's long awaited nForce chipset became an unfortunate victim of circumstance. While it is still the most feature packed chipset we have seen, the inclusion of an integrated graphics core in the high end nForce420-D variant meant that it was only really worth the money if you needed integrated graphics. This, combined with the speedy performance of VIA's competing KT266A chipset meant there was little incentive to choose nForce over other cheaper solutions.

NVIDIA has realised this and released the nForce415-D chipset, which is essentially a 420-D without the integrated graphics core but with TwinBank dual channel DDR RAM support. This way, we can get our hands on an nForce system without having to pay a premium for a graphics core that will never be used. In keeping with this, it has changed the name of the not-Northbridge from Integrated Graphics Processor (IGP) to System Platform Processor (SPP). Of course; don't think this is an example of altruistic behaviour on NVIDIA's behalf. With a vast proportion of the IGP given over to the GeForce2 MX core it allows NVIDIA to use some rejected IGP chips as SPP ones.

The first nForce415-D mobo to hit the Atomic labs is ASUS' A7N266-C. This is obviously lacking integrated graphics but includes Dolby Digital support via the combination of the Multimedia Control Processor (MCP-D) and the included ACR-A6CH Audio Communications Riser card. Surprisingly the board does not come standard with integrated Ethernet support, despite the fact the MCP-D includes an integrated 10/100 Ethernet controller. ASUS offers optional onboard Ethernet, but this uses a separate Realtek chip. Ah, the insanity.

In our in-depth look at the nForce 420-D chipset in Atomic 11 our tests showed that the only major advantage of the TwinBank memory controller was when the integrated GeForce2 MX core was being used. This means that it ends up as a somewhat redundant part of the 415-D chipset.

The A7N266-C was tested using an Athlon XP 1800+, 256MB PC2100 DDR RAM and a GeForce2 GTS 32MB. It was lined up against our ASUS A7V266-E testbench, which uses

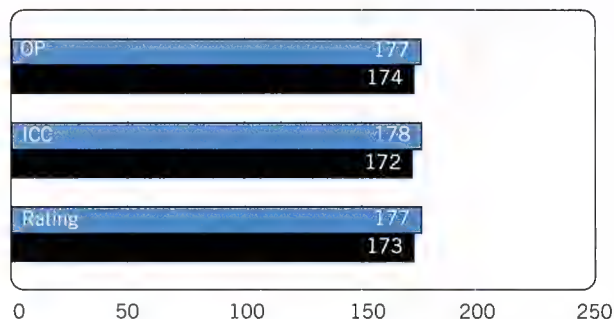
VIA's KT266A chipset (it must be noted that the A7V266-E is by no means the fastest KT266A board out there). We tested with SiSoft Sandra 2001, SYSmark2001 and Quake 3: Arena.

In SYSmark2001 the picture is very similar to that seen with most new Athlon DDR chipsets as there is minimal performance difference between the two motherboards. However in the more memory intensive Quake 3 CPU tests, the nForce pulls ahead by the tiniest amount (around four per cent).

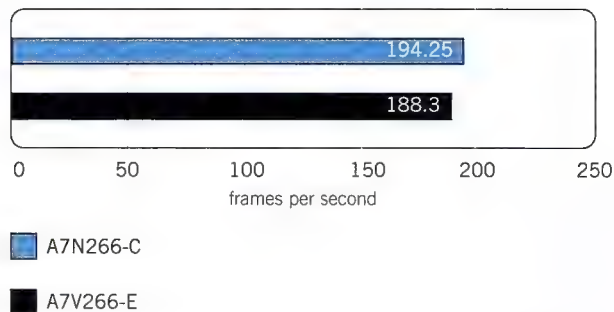
We have the same picture that is painted by the nForce 420-D, in that the A7N266-C performs at around the level of the slower KT266A boards on the market. Unfortunately, the board has the same issues as the 420-D; most prominent being the non-existent overclocking features (perhaps due to the 'radically different' nature of the chipset design).

ASUS has delivered another decent board in the form of the A7N266-C. The surprising lack of integrated Ethernet, as well as poor BIOS tweakability mean that it is lean in features, with Dolby Certified audio the only 'unique' aspect. The big brother nForce420-D stands out as an integrated solution, but the cut down nature of the 415-D places it smack bang in the same league as a myriad of other boards out there.

SYSmark2001 Pro



Quake 3: Arena CPU



SPECIFICATIONS

nForce 415-D chipset; Dolby Certified 5.1 sound support via riser card; HyperTransport; TwinBank Dual channel DDR controller.

Web site: ASUS www.asus.com

Supplier: Cassa www.cassa.com.au

Phone: Cassa (07) 5445 2992 Price: \$299





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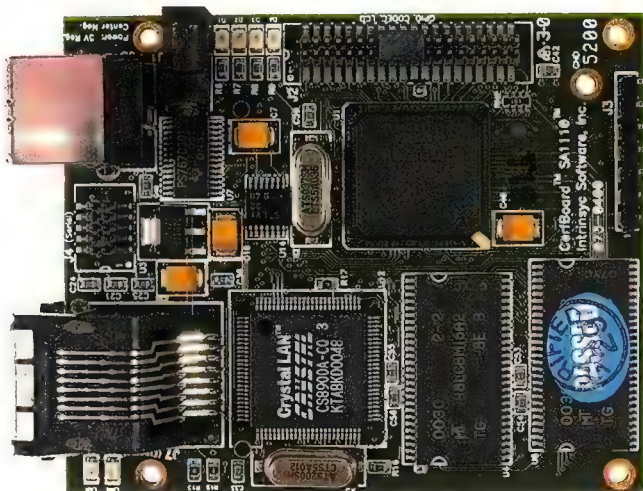
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Intrinsyc CerfCube

It's small, runs Linux and comes with a cute Tux sticker. But is it any good? Brad Webb finds out.



Here's an interesting question: is the CerfCube a Web server? If you answer yes then following your logic, IBM's ASCII White is a mail server. Sure, both have the capability, but if that's all you use them for, you should be certified criminally insane and locked away 'til the end of days.

At 442.5 cubic centimetres, the CerfCube is tiny. Its heart is the Intel StrongARM SA1110 CPU, running at 192MHz and strapped onto Intrinsyc's implementation of a Single-Board Computer: the CerfBoard. A StrongARM CPU, 16MB of StrataFlash memory, 32MB of SDRAM, three RS232 serial ports, USB port, CompactFlash interface and 10Base-T Ethernet, all wrapped up in a 7.62cm x 7.62cm x 7.62cm cast Aluminium cube and run via embedded Linux. And it has a cute little Tux the Penguin sticker on back. Awesome.

Intrinsyc also sells a WindowsCE version of the CerfCube for developers who would rather use non-UNIX platforms. We say 'developers' because that's who the CerfCube is primarily aimed at: people using the CerfBoard as part of their own custom systems. An Internet appliance this ain't.

Setup is relatively simple. Connect the Cube to a LAN (using either a hub or the supplied crossover cable), plug it into a host PC via serial cable, fire up a Terminal Emulation program, plug in power and away it goes. Twenty seconds or so after the juice is applied you're presented with the login prompt: login as root, set an IP with ifconfig and you now have a networked Linux box that is smaller than your average alarm clock.

The CerfCube comes with all the programs you need to run a basic Linux system: grep, mount, ls, mv, cp, ftp, tar and other vital commands. There are some notable exceptions, such as the GCC compiler, but pretty much everything you need for basic operation comes pre-installed. It's worth noting that several basic programs are emulated by custom software: ls, cp and others are actually missing, their functionality emulated by a program called 'Busybox'. Consequently, some commands don't work in quite the same fashion you would expect.

While you can use the CerfCube as a basic Webserver, its real potential only becomes apparent when hooked up to a

Linux workstation. Intrinsyc never meant for the Cube to be treated as an 'out-of-the-box' solution; instead, it's a development platform capable of adapting to almost any application you care to name: from mundane DHCP serving, traffic monitoring and the default Apache Webserver, through to custom applications for scientific research projects. In fact, one group is currently using the CerfCube as part of a weather monitoring project: the Cube's CerfBoard forms the heart of a Trans-Atlantic weather balloon gathering information from an altitude of 60,000 feet and relaying it back to researchers via satellite uplink.

Included on the CD is the Intrinsyc Linux ODK (OEM Developers Kit). The ODK has sample kernel sources, a cross-compiler for compiling ARM binaries on x86-based Linux systems, and documentation in PDF format. Using the ODK, developers can write and compile new applications for the CerfCube on the host x86 PC. There is currently a thriving community of CerfCube hackers doing just that: you can find it at <http://groups.yahoo.com/group/CerfCube>

The CerfCube has two filesystems: the / file system, which resides in RAM and is wiped clean every time you reboot (useful if you make mistakes and need to revert the Cube back to its original state), and /usr, which resides in Flash memory. You can make changes to /usr that will be persistent across a reboot, but it necessitates modifying the original boot image and flashing it to the Cube. If you end up using the CerfCube as part of a larger project, this is what you'll be doing to ensure all your work doesn't go down the drain every time someone accidentally enters 'shutdown -r now' and leaves a smart-arse comment on your desk. But I'm not bitter.

The included documentation, while thorough, has several errors. For instance, part of it states you need BOOTP and TFTP running in order to flash a new image to the Cube. While TFTP is certainly necessary, BOOTP is not. We spent a fruitless three hours attempting to have the CerfCube grab an IP from the BOOTP service running on our network. Despite having a perfectly running BOOTP service, the Cube simply refused to use it. In the end, we found the easiest way to flash a new boot image was to interrupt the boot process, drop into the iBoot boot loader program and type 'set ip xxx.xxx.xxx.xxx'. Once this was done, we could use TFTP to grab new boot images from the TFTP server.

The usefulness of the CerfCube will depend heavily on what you want it for. If all you need is a simple Webserver that won't be subjected to slashdot-like levels of traffic, then the CerfCube is up to the task. If, however, you need a small, low power embedded system you can customise and integrate into a larger project — such as the central controller for home security — Intrinsyc's CerfCube is the perfect solution. □

SPECIFICATIONS

Intrinsyc Linux, Intel StrongARM CPU at 192MHz, 16MB Flash, 32MB RAM, 10Base-T Ethernet, USB, 3x RS232, CF.

Web site: www.cerfcube.com

Supplier: Intrinsyc www.intrinsyc.com

Phone: N/A Price: \$738



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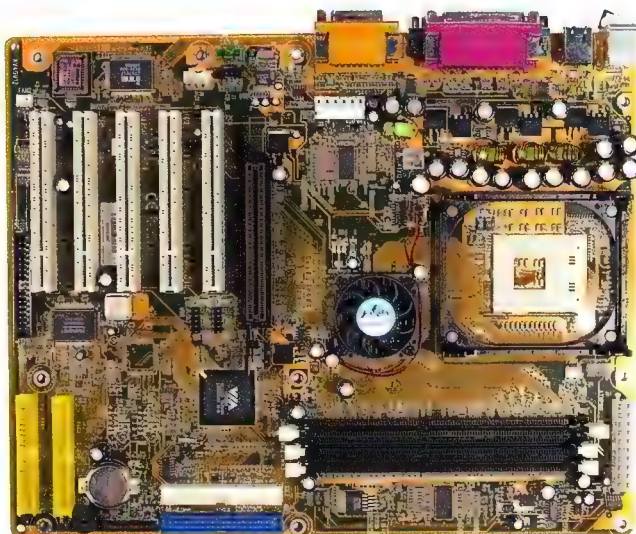
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Shuttle AV45 GTR

He expected a turbocharged sports car, but John Gillooly found a motherboard.



Only a few months ago it seemed all of Taiwan's motherboard manufacturers were waiting with bated breath for the resolution of the legal sabre rattling between chipset giant VIA and CPU giant Intel. In a rolling series of announcements the two behemoths sued and counter sued for violation of intellectual property rights, patent infringements and the bus licenses needed to make Pentium 4 chipsets.

This situation has quietened down, and VIA has managed to get some lower tier motherboard manufacturers using its P4X family of Pentium 4 chipsets. It is one of the worst kept secrets in the industry that most manufacturers had P4X boards ready to go, but were worried about legal ramifications. After all, the last company you want to piss off is the one responsible for a large part of your existence.

With legal guarantees from VIA in place, Shuttle produced the flagship P4X266 board in the form of the AV40, which showed performance above and beyond even the once powerful Intel 850 RDRAM based chipset. In what is becoming a regular occurrence, VIA has now enhanced the memory bus of the P4X266 and come out with the P4X266A, which powers Shuttle's new AV45 GTR motherboard.

Of course, since that point in time, the Pentium 4 chipset market has expanded. SiS has a very powerful offering in the form of the 645 chipset, and Intel is getting great performance from the i845 DDR chipset. The AV45 GTR enters a market that is much more crowded and competitive than that of its predecessor, against well performing, feature-packed competition.

In terms of features, the AV45 GTR is fairly light: the board only supports up to ATA100 HDDs with the normal IDE controller, but the Highpoint RAID controller does support ATA133. There is also an option for USB 2.0 support but this is not standard on the board. The only other extra is onboard audio with 5.1 channel speaker support. Apart from this, the board has a fairly standard feature set of five PCI slots and three DDR DIMM slots. One annoyance with the board's design is the placement of the floppy connector below the

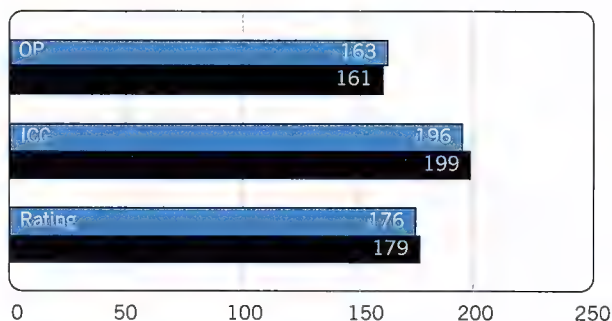
bottom PCI slot, which causes some problems with cable length, especially in some full tower cases.

We tested the AV45 GTR using a 2GHz Willamette Pentium 4, with 256MB of PC2100 (DDR266) DDR RAM. This was lined up against MSI's 645 Ultra board [which uses the SiS 645 chipset], using 256MB of Kingmax PC2700 (DDR333) DDR RAM. The boards were tested using SYSmark2001 Pro, Quake 3: Arena at CPU settings and SiSoft Sandra 2001.

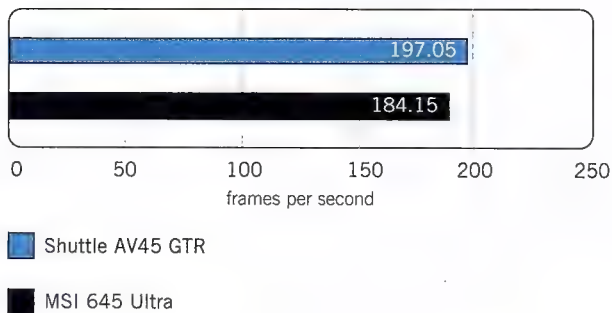
In SYSmark2001 Pro, the difference between the two boards is negligible, with the tiny gaps in results more a factor of the background benchmark noise than any difference in performance. Quake 3: Arena shows the AV45 GTR pulling ahead of the 645 Ultra by seven per cent, which is a respectable margin, but not earth shattering.

While it keeps up with the pack, and even outpaces it in some tests, the AV45 GTR unfortunately suffers from a lack of features in a market where features are becoming the only differentiating factor between boards. Even IDE RAID is becoming less of a bonus these days, with nearly all motherboards now having a RAID variant. Shuttle has again delivered a decent board — it just isn't a standout.

SYSmark2001 Pro



Quake 3: Arena CPU



SPECIFICATIONS

VIA P4X266A chipset; Promise ATA133 RAID; Onboard sound; supports 478-pin Pentium 4 CPUs.

Web site: Shuttle www.spacewalker.com

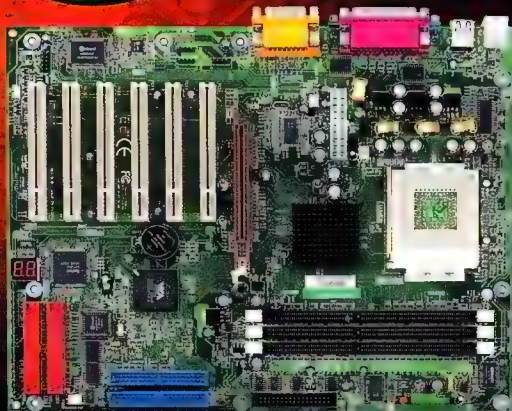
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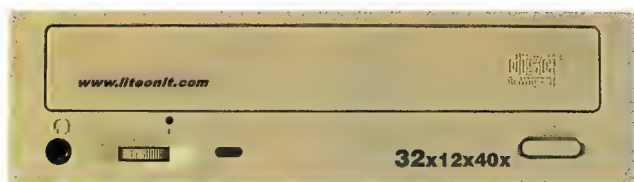
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Lite On LTR 32123S



It seems the way CD burner development goes is that one company will make a big leap in feature support or speed and then everyone will manage to catch up in a short amount of time.

Lite On was until recently one of only two companies to produce burners that supported RAW DAO 96, the mode that can burn the otherwise unburnable. Now other companies have caught up and added support for this method.

The LTR 32123S features RAW DAO 96 support, coupled with 32x write using Z-CLV (Zone-Constant Linear Velocity), 12x Rewrite using CLV (Constant Linear Velocity) and 40x read using CAV (Constant Angular Velocity). It also features SMART-BURN buffer underrun protection to avoid coaster production.

In our tests with Nero CD Speed 99 (www.cdspeed2000.com) the drive performed admirably, with the Z-CLV writing method on the drive translating to the first two minutes being burned at 16x, then next

ten minutes at 20x, then 26 minutes at 24x before the rest of the disc is burned at the full 32x. These numbers become important when you look at how much data you are burning onto a disc, and works out as being an average burn speed over the entirety of the disc of 26x.

Data read speed using CAV performed to specification, averaging 27x over an entire disc. Extraction of a 70-minute audio CD to Wav files took two minutes and 52 seconds, with an average CAV read speed of 30x.

Yet again Lite On has delivered a great performing burner at a fraction of the cost of competing models. Sure, it isn't a 40x burner, but there really is a negligible speed difference between 40x and 32x. The promise of near bleeding edge speed, comprehensive feature support and an almost ridiculously low price tag, makes the LTR 32123S an incredibly difficult burner to pass up.

SPECIFICATIONS

32x Write, 12x Rewrite, 40x Read, SMART-BURN buffer underrun protection, Nero Burning ROM.

Web site: Lite On www.liteonit.com.tw

Supplier: CWS Supplies www.cws.net.au

Phone: CWS Supplies (03) 5945 2000 **Price:** \$220



Altec Lansing Select 641



With a 400 watt power rating and quoted bass response down to a sphincter-loosening 27 Hertz, Altec Lansing's flagship 4.1 channel speaker system would seem to be the equal of much more expensive rigs. It's not really, of course. But it's still good.

Check the small print and you'll find that the genuine RMS power rating for this system is only 200 watts. That's not [!]that[!/] important because you need ten times as much power for a noise to sound twice as loud. The 641 is still loud. More significantly, the subwoofer doesn't actually have worthwhile response at 27Hz. 40Hz is about the real limit for its bass in the average computer room. That's still pretty amazing for a

computer speaker subwoofer. Play bassy music and the Select 641 sub will show you everything in your computer room that can rattle. You don't get bass like that from a small box. The rather heavy 641 sub box is 46 x 21 x 44cm, and it packs two 6.5 inch bass drivers.

You control the 641 system with a slick wired remote to switch between stereo-only, doubled-stereo surround and true surround, and with one knob control volume, bass and treble. The four Select 641 satellite speakers each contain a one inch tweeter and a midrange driver that's a three inch if you're kind, or a 2.5 if you're not. The sats are magnetically shielded, and they connect to spring terminals on the back of the sub with a plain two-strand wire. You also get a couple of adaptors to hang one pair of sats on the wall.

No multimedia speaker system is really high fidelity — that includes the Select 641. The satellites aren't rubbish, but they don't provide a crystal clear soundstage, either. The subwoofer gives you lots of bass, but not lots of clear bass. If Vivaldi isn't high on your listening list, then these are well worth the cost. ○

SPECIFICATIONS

200 watt 4.1 channel speaker system with twin driver ported subwoofer, and four twin driver satellites.

Web site: Altec Lansing www.alteclansing.com

Supplier: Innovision www.innovision.com.au

Phone: Innovision 1300 785 795 **Price:** \$499



Belkin N40 USB Gamepad



Apparently a special breed of gamer exists that gets its kicks by playing console-style games on \$4,000 ninja fast PCs. This might seem hard to believe, until you notice the huge number of different PC gamepads available. Judging by the ever-rising quality of console titles, this trend is

set to continue (anyone for some GTA3 on the PC?). Belkin seems to have its fingers in a lot of different peripheral pies, so it's no surprise to see it release a PC gamepad. It's called the N40, and it has a revolutionary feature known as the ASB.

To you, the ASB is a plastic bar that connects both handles, making this controller look like a high-tech dumbbell. To Belkin, it's the 'revolutionary Action Stabiliser Bar', added to make the controller steady during use. But to Atomic, it's a useless hunk of plastic, which thankfully doesn't get in the way, but it still doesn't really do anything helpful.

Other than this weird little bar across the bottom of the handles, the N40 is a pretty stock standard gamepad. Due to the lack of any analog controllers you'll have to settle for the digital D-pad, which will no doubt deter many. If you can get past

this fact, you'll find this gamepad to be very comfortable to use, which is an important quality in something you'll be groping and grappling with for hours at a time. The handles are a little wider than what we're used to, but they're not as big as the unwieldy Xbox controller's.

In a tribute to Sony's PS2 gamepad, two left and two right shoulder buttons are provided, while another six adorn the face. Each of these is programmable via the incredibly simple to use Profile Editor, which uses a graphic of the gamepad to show you exactly which buttons you're programming. Each of these can be assigned as any key on your keyboard, or as a combination of keystrokes, making this pad perfect if Dead Or Alive 3 ever makes it to the PC (yeah, right).

The lack of any analog control sticks on this gamepad is a bit of a killer flaw. If you're buying a PC gamepad, you really are better off going for a controller that gives you some stick. As such we can only recommend this gamepad to those who prefer to use D-pads over analog sticks, who, like the endangered inverted mouse gamer, is a dying breed.

SPECIFICATIONS

Max SPL: 120dB SPL with 3% THD, Frequency Response: 150Hz – 8kHz, Impedance: 1k – 100k ohms drive capacity.

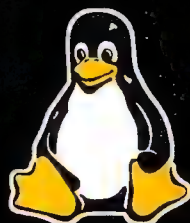
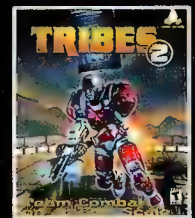
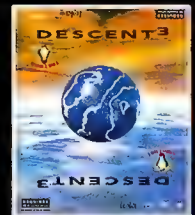
Web site: Belkin Components Ltd. www.belkin.com.au

Supplier: Belkin Components Ltd. www.belkin.com.au

Phone: Belkin (02) 4372 8600 Price: \$29.95



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A4tech wireless mouse



The day when all computer cabling has been replaced by tidy radio waves shall be a great day indeed. One of the first peripherals to jump onto the wireless bandwagon was the humble mouse, with varying levels of success. This mouse from the wizards at A4tech combines the wonders of wireless operation with an optical sensor.

This RF mouse has a range of approximately two metres, which isn't quite far enough to use during a presentation. Due to it being RF based, as opposed to IR, you don't need to worry about maintaining line of sight between the mouse and its receiver.

Included within the pack are two rechargeable NiMH AAA batteries that can be easily recharged by attaching the supplied USB cable to the mouse and 2.5 hours later you're good to go. To help save battery power, the

mouse puts itself to sleep after two minutes of inactivity.

The RF mice we've looked at in the past have been crippled by the number of times per second that the mouse communicates with the RF transmitter/receiver. In some cases this has been as low as 35Hz, leading to very jerky rotations within games, especially first person shooters. However, after testing this mouse with a small application called Mouserate, we found it has an update rate of 90Hz that provides a very smooth input even when using graphics applications such as Photoshop.

This mouse proved to be very comfortable to use, with a design very reminiscent of Microsoft's Intellimouse. The only complaint we could make is that the centre section around the mouse wheel encroaches a little too far into the area for the left mouse button, and the absence of a thumb button.

The low cost of \$75 makes this already attractive mouse even more worthy of your purchase — in all an excellent mouse at an even better price.

SPECIFICATIONS

PS2 connection; optical sensor; two metre range, two RF channels, USB recharger.

Web site: A4tech www.a4tech.com

Supplier: Rectron www.rectron.com.au

Phone: Rectron (03) 9561 6166 Price: \$75



Thrustmaster Cougar HOTAS



First things first: this leviathan of a throttle and joystick setup is only for the hardest of hardcore flight simmers — who else would pay \$600 for a HOTAS (Hands On Throttle And Stick)? For this large amount of cash you get the most robust joystick money can buy, constructed entirely from moulded steel. If there were ever a nuclear attack, this joystick would still be around for the roaches to play with.

Both the 3kg throttle and the 3.8kg joystick are precise replicas of those found in the Block-50 F-16 fighter, right down to the labels for each button and hat switch. 28 buttons

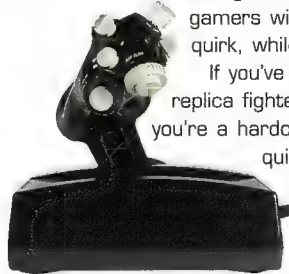
cover both the throttle and joystick, each of which is fully programmable — when Thrustmaster says programmable, it means programmable. Prepare to sign away a week of your life chewing through the massive manual, learning the proprietary language employed. If the power offered by this true programmability is all a little daunting, the included Foxy software makes the task of re-assigning buttons a fairly simple affair.

A slight problem with the Cougar is the amount of force necessary to move the joystick, although it's certainly an improvement on some of Thrustmaster's earlier models. Unless you're an Iron Man you'll find your joystick arm beginning to tire after a short period of time, but you'll soon have bulging biceps

(on one arm at least) courtesy of the 18-pound springs. In fact the resistance was so strong that the heavy base of the joystick lifted when executing hard turns. As a result you'll want to mount both devices securely to your desk to make sure they don't move during use.

Perhaps the biggest flaw of the joystick is the 'clickiness' experienced when moving the joystick — it seems to want to stay in either the X or Y axis, and not go into the diagonals, making manoeuvring a little difficult. Some gamers will despise the joystick due to this quirk, while others will learn to live with it.

If you've just turned your spare room into a replica fighter cockpit, you need this joystick. If you're a hardcore flight simmer, you should have a quick play in the shop to see if you're comfortable with the stiff joystick before deciding. But if you're only a token fly boy, you shouldn't even be reading this review.



SPECIFICATIONS

28 buttons, switches and sliders; 5-10 axes; USB connection, Foxy programming software.

Web site: Thrustmaster www.thrustmaster.com

Supplier: Guillemot www.au.guillemot.com.au

Phone: Guillemot (02) 8303 1818 Price: \$599



Nokia 9210 Communicator



The Nokia 9210 is Nokia's flagship mobile phone. This might not be immediately apparent, as it bears a striking resemblance to the common house brick. It's only when you split the phone in half along its length, revealing a full keyboard and a 110mm x 35mm 4,096 colour backlit LCD screen, that you realise this is no ordinary phone.

Using the Symbian EPOC32 operating system, the communicator functions like a high end PDA. Included are basic word processing and spreadsheet applications, but it also makes use of the device's connectivity to provide full email and Web browsing facilities. This

connectivity is provided via Dualband (GSM900/1800) EGSM, giving it a maximum download speed of 43Kbps, providing your chosen mobile network supports such speeds. The applications are all fully compatible with Windows file types, allowing you to take data from your PC out on the road. When it comes time to download files from your PC to the



Communicator, you'll have to make do with the sluggish serial or IR connections. Considering how slow these can be, it's surprising that Nokia didn't use a much speedier USB connection, but you'll probably only be working with smaller sized files anyway. A multimedia card slot allows you to use new third party applications, as well as expanding the unit's total memory, which by default is 16MB.

Powering all of this functionality is the 32-bit, ARM9 processor, which seems to be up to the task as we didn't notice a hint of slowdown when going about usual desktop tasks. The screen is exceptionally crisp and clear, which makes the viewing of Web pages and multimedia files easy on the eyes. As far as the ergonomics go, it's not the comfiest to use as a phone, but the miniaturised full keyboard proves surprisingly easy to use after a bit of practice.

Weighing in at only 244 grams, this thing packs a lot of punch for such a small unit. You can expect to see more of these combined mobile/PDA devices in the very near future but until then the 9210 is the only option, albeit a costly one. ☐

SPECIFICATIONS

32-bit processor, ARM9 16MB RAM, Symbian EPOC32 OS, Dualband EGSM, 43Kbps download speed where supported.

Web site: Nokia www.nokia.com.au

Supplier: Innovision www.innovision.com.au

Phone: Innovision 1300 785 795 Price: \$149



PL-iP3/T Tualatin CPU Convertor



If you're stuck with a Slot 1 Intel-compatible motherboard you're probably starting to feel those sub-GHz blues. It's next to impossible to find a second hand Pentium III 1GHz Slot 1

CPU these days, so you'll need

to make a major upgrade to get past the hallowed one gig mark. This means it's

going to cost you at least a new motherboard, plus a new CPU, which will probably set you back around the \$450 mark. That is, unless you use the elegantly named PL-iP3/T Tualatin Upgrade kit from PowerLeap.

The device looks like a Slot 1 processor cartridge with a Socket 370 on one side, into which you mount your new Tualatin CPU. To power the new CPU at the correct voltage, a molex connector from your PSU plugs into the unit's own VRMs (Voltage Regulator Modules), bypassing those on your motherboard. Bayookasha, your Tualatin incompatible Slot 1 dinosaur is now capable of running a 1.2GHz CPU.

As well as the Slot 1 mount for your new CPU, the kit contains a tube of thermal paste and a low profile heatsink/fan combination to keep your new best friend nice and chilly. It's not the highest quality HSF but it doesn't have to be, as Intel chips aren't exactly blazing slabs of heat. Some motherboards won't

correctly identify the CPU at boot, but a few rounds of benchmarking will prove that it is running at the correct speed.

If you're of the tweaking persuasion, you'll find the lack of front side bus and CPU voltage control disappointing. The ability to set the FSB to 66MHz, 100MHz, and 133MHz is the only setting available, with no way to adjust the voltage at all.

Not all motherboards support this device, so you'll need to head to www.powerleap.com to check that your current motherboard is compatible with it. Likewise, certain BIOS versions don't want to play with the PL-iP3/T, so you'll also need to check which BIOS version is suitable.

At around half the cost of a Socket 370 motherboard, you might be better off buying a new motherboard to increase your upgrade options down the road. But then again, it doesn't look like Intel's Socket 370 is going to be around for much longer anyway, making the move to a Pentium 4 or AMD motherboard sometime in the near future inevitable. This makes the Tualatin Convertor a suitable solution for those who don't want to make a major upgrade but still want a decent mid-level processor. ☐

SPECIFICATIONS

Slot 1 to Socket 370 CPU convertor, Tualatin compatible, onboard VRM.

Web site: PowerLeap www.powerleap.com

Supplier: U.Y.C. Computers www.uyc.com.au

Phone: U.Y.C. Computers (02) 9982 9939 Price: \$149





Lacie Hexa Media Drive



As flash memory prices continue to drop the proliferation of media using this technology continues to increase. Likewise, IBM's Microdrive seems to be going from strength to strength. The most common use for these storage mediums is within digital cameras, and there is a wide variety of different formats of Flash memory storage types in use within these cameras. The Hexa Media Drive is a single

device that can handle the majority of these different media types.

In fact, this drive can accommodate six different storage types, those being the CompactFlash cards (type I and II), Memory Sticks, SmartMedia (3.3V only) cards, Microdrives, SD Cards, and finally MultiMediaCards. That's one hell of a lot of different media formats for one little drive.

On the front of the drive are two multiformat slots, each capable of handling several different types of media. The unit is quite small, at only 92mm x 72mm x

20mm, with a total weight of 90 grams, allowing this drive to fit snugly into the portable category.

This has to be one of the simplest to install devices to ever have graced the Atomic testbenches. We installed it on a Windows XP machine by simply plugging it in to the USB port. No drivers or fiddling with cryptic settings was necessary — it doesn't get much easier than this. Of course, if you're running another Win9X OS, you'll need to install the drivers first. Once the drive was plugged in it immediately appeared under My Computer, allowing us to download the recent happy snaps we caught of a drunken Brad in the gutter outside our office.

There aren't a huge number of people who have more than one digital camera or device that uses these storage types. However, those that do will most likely find that each uses a different media type. For these select few, the Hexa Media Drive makes for a very cheap and convenient solution. ☐

SPECIFICATIONS

Six different media types, USB 1.1 connection, plug and play compatible, no external power source necessary.

Web site: Lacie www.lacie.com.au

Supplier: Lacie sales@lacie.com.au

Phone: Lacie (02) 9669 6900 **Price:** \$159



Zalman CNPS 5500-Cu



Zalman distinguishes itself from other heatsink manufacturers with attractive designs that are radically different to the competition. Just take a look at its range of AMD heatsinks if you don't believe us. The great thing is that these designs usually do the job well, with the added

bonus of near silent operation. We raved about the CNPS6000-Cu Socket A processor back in issue fourteen, so we were keen to see how the Pentium 4 models performed.

While the CNPS 5500-Cu isn't quite as bizarre as Zalman's AMD line, it's still very different from the rest of the pack. The all copper fins are positioned in an elliptical arrangement, with a special noise-reducing hollow in the centre. This results in near silent operation, although most Pentium 4 coolers aren't exactly ear splitting anyway.

Mounting this HSF didn't prove to be quite as user friendly as the CNPS6000-Cu, as it uses primitive plastic clips. Even the coolers that ship with Pentium 4 CPUs are easier to install than this HSF.

To measure the performance of this unit we strapped it to a 2GHz Williamette Pentium 4, before running our standard HSF test (see the benchmarks page for an explanation of this testing process). We also tested it against the HSF that Intel includes with this processor. Ambient temperature for the tests stayed at a constant 22°C thanks to our chilly airconditioned offices. Bare in mind that the Pentium 4 isn't the hottest CPU around, so the temperatures should all be low when compared to a similar speed AMD system.

The temperature we care about most is the load temperature, and this cooler didn't perform too badly, coming in a degree cooler than the Intel cooler at 45°C. Idle temperature was a little more impressive at 28°C — 2°C cooler than the Intel HSF.

If this HSF were cheap we wouldn't hesitate to recommend it. However, \$100 is a lot to pay for a 2°C drop in temperature.

It might perform better down the track when the Pentium 4s start to get a bit steamier, but until then it doesn't warrant the extra cost. ☐

SPECIFICATIONS

Socket 478 form factor; all copper construction; fan speed unit; 2800RPM 80mm fan.

Web site: Zalman www.zalman.co.kr

Supplier: Quiet Computers www.quietcomputers.com.au

Phone: Quiet Computers (07) 5543 1945 **Price:** \$99



Thrustmaster Tactical Board



Ever since the dawn of time, well actually, since the release of Terminator: Future Shock way back in 1995, the first person shooter has been driven by a keyboard and a mouse combo. For almost as long, companies have been trying to improve on this control


method, from all in one controllers to specific keyboard replacements like the Australian made Claw.

Another month, another attempt to usurp traditional game controls. The Tactical Board from Thrustmaster is so laden with buttons that it could almost be considered a keyboard in its own right. Based around a set of large movement keys, the aim is to put as much control at your fingertips as possible. In fact, one of the main problems with the board is that it is initially quite daunting trying to remember exactly what each of the 42 keys are bound to. Of course, once the fear of the new subsides, the Tactical Board is a surprisingly natural means of control.

One of the best features is the adjustable position of the

thumb buttons, which makes the board suitable for a wide range of hand sizes. Similarly, the pull out wrist rest can be positioned to make those extended periods of shooting as comfy as possible.

As a game controller, we've got to admit that the tactical board works as well as the mighty keyboard. It won't suddenly make you into a world fragging champion, but its advantages are comfort and button accessibility. If your keyboard use revolves around Quake style simplicity then the Tactical Board is pure overkill, but if your tastes run more along the line of the latest control-heavy shooters, then the myriad of buttons right under your fingertips are a saviour when compared to the relatively cramped keyboard layout.

The sheer number of buttons means that it is a highly suitable controller for RTS games as well and the included software allows all the keys to be rebound, maximising flexibility and choice of games. The keyboard isn't dead yet, but it is in danger of being killed by the need for too many controls at our fingertips. Thankfully the Tactical Board is here to save us. 

SPECIFICATIONS

42 keys (41 programmable), adjustable wrist rest and thumb buttons, scroll wheel, USB connection.

Web site: Thrustmaster <http://au.thrustmaster.com>

Supplier: Guillemot <http://au.guillemot.com>

Phone: Guillemot (02) 8303 1818 Price: \$129



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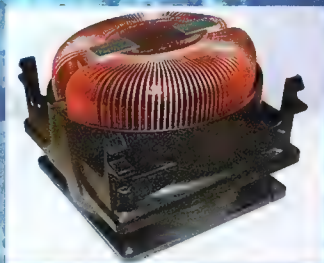
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D & KE Agostinetti

www.davidandkarma.au.com

WA

Austin Computers

www.austin.net.au

Understanding Computers

<http://insight.iinet.net.au>



Anypak AP20GB USB HD



When it comes to computer hardware, the old saying 'bigger is better' is definitely not applicable. Atomicans like their devices to pack a whopping punch from the smallest possible package. The manufacturer of the Anypak AP20GB claims that this drive is the smallest mobile hard drive on the market, so we thought we'd better take a look-see.

At 9mm x 71mm x 118mm, and weighing a mere 140 grams, it looks as if the manufacturer's claims are true. To put it into perspective, this mobile hard drive is only slighter longer than a packet of cigarettes, and much thinner. It also happens to look schtonkingly sexy, with an anodised red finish. We never thought we'd ever say how attractive a hard drive looks until we saw the Anypak.

The drive within the case is actually a Fujitsu MHN2200AT, which is an ATA100, 2.5 inch, 4,200RPM drive. While this drive has an internal transfer rate of 30.7MB/s, real world performance is severely limited by the Anypak's USB connection. We tested the real world

speed of the drive by copying 134MB-worth of various files as well as a single 134MB zip file while timing it with a stopwatch. Over several tests the real world bandwidth proved to be around 1MB/s, which is slightly slower than the 1.5MB/s limit of USB.

Installation proved to be very simple: after inserting the USB connector and turning the drive on, we were prompted to insert the driver CD. Within seconds the drive was up and running. Unfortunately you can't just plug the drive into a new PC without the drivers, meaning you'll have to lug the installation CD around with you whenever you want to hook it up to a new PC. Thankfully the drive is powered via the USB connection, so you don't need to carry an external power supply.

The only complaint we could make about the Anypak is its price of \$700, which is a little more than your average 20GB external mobile drive. But you pay for what you get, and what you get with the Anypak just happens to be the world's smallest external hard drive.

SPECIFICATIONS

18.6GB capacity, USB connection, hot swappable, no external power source needed.

Web site: ANYPAK www.anypakdrive.com.au

Supplier: Datamovers www.datamovers.com.au

Phone: Datamovers (08) 8357 9994 **Price:** \$699



Claritel i750



There are many ways to use your Net connection for voice calls (Internet telephony) — free software for PC-to-PC calls, pay services for PC-to-phone calls — but one thing you need for every Net phone system is a computer with sound input and output.

A plain old sound card with a microphone will do. Speakers will work if your Net phone software handles echo cancellation itself, but headphones are better. Getting that all sorted out can be harder than it sounds.

Enter Clarisys, with its plug-and-go \$229 Claritel i750.

The i750 looks like a phone, but it's actually a USB audio device with buttons. To make it work, you just install the software (it works with everything from Win98 to WinXP) and plug the i750 in. It shouldn't be necessary to fiddle with sound properties and if you don't

have any Net phone apps installed already, the Clarisys software comes with a few.

To use the i750 press the hook button on the handset and then use its arrow keys to select the Net phone system you want to use from a menu on your PC

screen. Then you dial the number — or use the standard phone software interface to pick a number from your address book, navigating with the keyboard and mouse or with the handset arrows — and proceed with your phone call.

The i750 has a speakerphone mode, which allows you to sit it on your desk and talk hands free — which is good, because as a handset, the i750 is lousy. The rubber plinth on the back is uncomfortable to hold, and the USB cable exits *upwards*, rather than hanging from the bottom like a normal phone handset cord.

If your computer's existing sound hardware works OK with the Internet phone app of your choice, there's not a lot of reason to drop \$229 on an i750. It's not as if it's cordless, or anything. If you've got to have the speakerphone function then the i750 does it pretty well, but if you don't need multiple people to be in on the call at your end, you might as well pay less for a simple headset with a mike.

SPECIFICATIONS

USB Internet phone handset with speakerphone function, plug and play compatible.

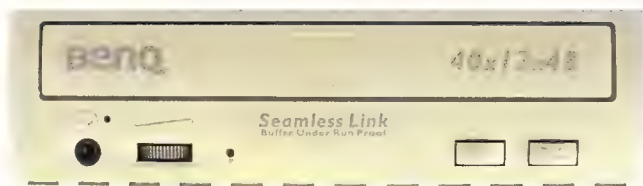
Web site: www.clarisys.net

Supplier: Innovision www.innovision.com.au

Phone: Innovision 1300 785 795 **Price:** \$229



Benq CRW 4012P



The CD write speed bubble has well and truly burst, following a similar trend to what happened with CDRom drives a few years ago. Benq's CRW 4012P is the first 40x burner to hit the Atomic labs and it combines both high-speed writing with a veritable buttload of features in the pursuit of blisteringly fast, reliable and comprehensive burning options.

Burning performance is rock solid, thanks to a combination of Z-CLV (Zone-Constant Linear Velocity) technology, with 40x necessitating four zones on the disc, the first 10 minutes are burned at 16x, then increasing in 24 minute intervals at 24x, 32x until the final crescendo of 40x. This couples with the inclusion of Benq's Seamless-Link firmware based buffer underrun technology, and an enormous 8MB buffer to minimise the possibility of unsuccessful burns.

Besides the performance, the CRW 4012P also supports a wide range of burning methods, including RAW

DAO 96. This was until recently the Holy Grail of CD-Burning technology; enabling backing up of a comprehensive range of discs, including SafeDisc 2 protected ones.

Read performance is also solid, using Constant Angular Velocity (CAV) technology to attain the peak 48x read speeds. Digital audio extraction speed is lightening fast, with a 70-minute audio CD being extracted to Wav files in only 2 minutes 26 seconds.

The overall drive performance borders on ludicrously fast. It is at the point where it is taking longer to write the lead in/lead out than it is to burn the CD itself, as long as you can get your hands on suitable media. Thankfully the included Nero Burning Rom software allows you to ramp the burn speed from a lowly 4x all the way up to the all-singing, all dancing 40x maximum. Our only issue is that the small speed difference between high priced 40x and much more reasonably priced 24x models means that unless you really need those extra minutes in your life, you can happily save money by going slower.

SPECIFICATIONS

40x write, 12x rewrite, 48x read, Seamless-Link buffer underrun protection, 8MB buffer, Nero Burning Rom.

Web site: Benq www.benq.com.au

Supplier: Benq www.benq.com.au

Phone: Benq (02) 9714 6800 Price: \$449



Benq VP150X projector



Portable video projectors keep getting brighter. They're getting cheaper, too. Slowly. Benq sounds like a new company, but it's not. It used to be called Acer Communications and Multimedia, before it traded that long lumpy name for a short silly one.

Acer/Benq/whoever has been making projectors for some time, and the 1024 x 768 resolution VP150X is now its best baby model. The VP150X qualifies as an 'ultra-portable': it weighs about 3.65 kilos, and it's only 325mm long by 99mm high by 240mm wide. So smuggling it out of the office for a movie night or LAN party should be easy. Whatever you want to project, the VP150X can probably handle. It's got composite, S-Video (Y/C) and VGA (RGBHV) input connectors, plus a pair of tinny speakers, and it comes with a box full of cables that let

you hook it up to PCs, Macs, VCRs, DVD players and so on.

There's a VGA passthrough port so you can use your normal monitor as well, and there's also a remote control with mouse emulation. You hook the projector up to your computer with the included serial, PS/2, USB or Apple Desktop Bus cables, and then you can push your pointer wirelessly, using a directional pad on the remote. No good for games, but better than keyboard shortcuts for everything else.

The VP150X uses a 150 watt Ultra High Efficiency (UHE) short-arc metal vapour lamp which has a respectable 2000 hour working life, enforced by a built in timer. This lamp gives the projector a very imposing 1800 ANSI lumen brightness, which means that if you keep the image size down, it can punch through lots of ambient light if it has to. It can also throw a very large, decently bright image if you use it in dimmer conditions. It's got a 1.3X zoom lens, and you can set it up from 1.64 to 12.55 metres from a screen (or wall), and get a 30.76 to 300 inch diagonal image.

The down side? It's more than nine thousand bucks...

SPECIFICATIONS

Portable high brightness 1024 x 768 video projector, 3.65kg in weight.

Web site: www.acerem.com.au

Supplier: Rectron www.rectron.com.au

Phone: Rectron (03) 9561 6166 Price: \$9,299





HALO 02
ATOMIC GAMES REVIEWS

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Hot steamy goodness?

Until one fateful afternoon, John Gillooly thought the craziest bet he had ever made was that mullets would be the next big thing in fashion.



Everyone is an expert. Oftentimes this involves loud shouting and waving of arms when someone attempts to put forward a contrary opinion, but other times, when passion is truly running high this translates into the ultimate expression of opinion: the crazy bet. Now I'm not talking about a once a year Melbourne Cup wager, I'm talking about putting hard earned cash on your wild ideas.

After one particularly memorable afternoon at the pub, one of my lovely co-workers — for the sake of argument let's call him Player1 — made perhaps the craziest of crazy bets: That Team Fortress 2 would never be released. Setting aside the gulf in logic that means this is an unlosable bet from my perspective, it did reinforce the fact that we have been eagerly waiting for this game to surface for a stupid length of time.

It does beg the question of just what on Earth Valve Software has been up to, besides throwing money at mod developers to prolong the half-life of Half-Life. The picture has cleared somewhat after Gabe Newell's keynote address at this year's Game Developers Conference. But first some background.

I have been tooling around as a Valve beta tester (unfortunately Half-Life mods only) for a few months now, and the centrepiece to this is an application called Steam. This little sucker essentially streams content updates for mods and also includes an instant messaging client called Tracker and game browser. In its beta form it is still buggy and also suffers from reduced functionality, such as the need to redownload everything when a new version of Steam, or a new mod update, is released.

Just what Steam is exactly finally started to condense with Gabe Newell's address. At heart it is a content delivery system, spanning a range of tasks from online purchase and delivery of new games, through supposedly hassle-free background patching and updating of existing games. It is also the centrepiece to Valve's much whispered about and eagerly anticipated anti-cheating system for Half-Life and its mods.

The way that Steam works as a patching system is that it only updates the files necessary and is alleged to streamline the huge hassles that come with the new release of a major mod like CounterStrike. It also reduces the amount of data needed to be downloaded before jumping in and playing. In fact, the first time the wider community will get all Steamy is with the launch of CounterStrike 1.4. This dynamic patching is also the key to the anti-cheating system as it allows Valve to update code as fast as people can hack it. It remains to be seen how well this actually works, as cheat coders are a notoriously sneaky bunch, but in principle it should drag mods like CounterStrike back from the petty accusatory bitch fest that they have become.

But this system of patch delivery is peripheral to the real aim of Steam, namely as a broadband game delivery platform. This will have its first real test with the release of the single player CounterStrike: Condition Zero, which will be simultaneously available as a boxed product on shelves and as streamed content via Steam. At this point in time even Valve admits that it is a completely untested means of selling a game, and the success or failure of Condition Zero will determine just how Steam moves forward as a 'retail outlet'. Of course, Valve will be hoping and praying that it takes off, and is already talking to other game developers about using Steam for game delivery.

There is also serious talk by Valve of a subscription model for its games. The details are still fuzzy, but it appears to be based on the payment of a monthly fee for access to games like Half-Life, Opposing Force, Gunman Chronicles and Blue Shift. The mods will remain free for owners of Half-Life though.

For us poor Antipodeans there is potentially a raft of benefits from Steam. The biggest of these will be that we can actually get our hands on games when they are released overseas rather than waiting the few weeks before someone actually realises that Australia exists and sends a container load of games our way (this is becoming less of a problem as time passes but it is also just a tad frustrating at times).

Of course, while the patching service promises to be streamlined and much more effective than sucking down an 80MB update for poor dialup users, game delivery will still prove to be unfeasible. And let's not even start on how badly streaming a full game will sodomise your 3GB Telstra cable cap.

So that is why we are still waiting for Team Fortress 2, the E3 1999 Best Action and Best Multiplayer game. Who knows, maybe thanks to the wonder of Steam we really will wake up one morning and find that Half-Life has become Team Fortress 2. When that day happens I can't wait to front up to Tim, I mean Player1, and ask for settlement on that crazy bet. I bet it'll have him steaming with anger.

HALO

Bennett Ring discovers that it's possible for a console FPS not to elicit sheer contempt.



① Confidence is high when you're got a tank providing backup.

There is hype, and then there is HALO. Initially planned for the PC, Bungie decided to first release it on the Xbox, which probably had something to do with Microsoft purchasing the entire company. As the most anticipated launch title for the Xbox, there is a lot riding on the success of this game.

In this first person shooter, you play the role of a cyborg soldier from hell known as Master Chief, with one thing imprinted on his biomechanical brain: kickin' alien arse cheek back to the interstellar slums from which it originated. Somehow you've ended up on a bizarre ring-shaped world (insert suitable anus pun here) known as HALO, which is much more than the religious artefact it was initially believed to be. You'll be facing off against hordes of aliens known as The Covenant, before meeting a mutated freak show known as The Flood. Each of these groups is radically different, but they don't have a huge variety of characters: in all you'll face off against approximately ten different enemy types throughout the entire game.

If you haven't seen HALO running yet on the Xbox, you need to. It is quite simply the most drool worthy console FPS in the history of gaming. The power of the NVIDIA NV2A graphics chip has been put to good use in creating this richly detailed and vast world, with gorgeous inhabitants and woody inducing vehicles. These come at a cost though: framerate. When we saw the NTSC version of HALO, there was nary a slowdown in sight. And then we saw the PAL version chug, chug, chugging along. Apparently HALO was a very NTSC-centric program, and Bungie has obviously had a few problems making the port to PAL. Thankfully you soon get used to the slowish frame rates, but it's a problem that shouldn't exist at all on a fixed hardware console.

Backing up the amazing albeit sluggish visuals are the spiffy sound effects, which make great use of the Dolby Digital capability of the Xbox. We were totally chuffed to see that many of the teammates speak with an authentic Aussie accent, and they are constantly coming up with new and funny comments, although we still wish one of them would say: 'That's not a blaster rifle. THIS is a blaster rifle'. As for the music, how does a dynamic, rich and masterful orchestral score sound? That's right, very nice indeed.

When it comes to the gameplay, it's pretty standard first person shooter fare. You might think that playing an FPS on a control pad would be about as comfortable as inserting a squirming echidna up your rectum, but somehow Bungie has managed to pull it off. It still can't compare to the accuracy offered by a mouse/keyboard combination, but the spread effect of the weapons helps to offset this.

The inclusion of several different vehicles helps to spice things up, but the most noteworthy feature is the enemy AI. We'd be hard pressed to



① Each seat on the vehicles can be manned.

find a PC game enemy that can match the IQ of these guys, let alone a console bad guy. On countless occasions we sat back and let the Covenant and Flood fight it out in epic battles which lasted at least five minutes, before storming in and mopping up the remaining few. When you realise none of these battles are pre-scripted, it's hard not to be blown away by the life-like qualities of the enemies.


You'll finish the game in around ten hours, which is standard for a first person shooter these days. The storyline that unravels over the ten levels is a finely crafted piece that helps to maintain high levels of suspense and intrigue throughout the entire game.

Thanks to the networking capabilities of the Xbox it's possible to have up to 16 players per game, using four Xboxes running in quad split screen mode. There is a huge range of different game types, more than any first person shooter has ever included, with a favourite being the co-operative mode.

Microsoft must be breathing a huge sigh of relief after seeing how kick arse HALO has turned out to be. It can't compete with the high-resolution display and online capabilities of PC first person shooters, but as a console representative of this genre it's head and shoulders above the rest.

atomic
9/10

GAME DETAILS

 **FOR:** In every way, the best first person shooter for a console. Ever.

 **AGAINST:** Sluggish framerate, lack of enemy variety.

DEVELOPER: Bungie Studios www.bungie.com

PUBLISHER: Microsoft www.microsoft.com

DISTRIBUTOR: Microsoft www.microsoft.com

PHONE: Microsoft (02) 9870 2460

Ghost Recon: Desert Siege

It's time to strap on the combat boots and grease up your M-16 with Bennett Ring.



① There are a range of new specialists and new weapons for your tactical needs.

If you want to lead a squad of elite US soldiers into combat, but can't be bothered going through eight weeks of boot camp hell, another few years of bullet dodging service and one seriously unattractive crew cut, the closest you can get is to play Ghost Recon. Given the popularity of Ghost Recon, it was inevitable that Red Storm would release an expansion pack, which has arrived in the form of Desert Siege.

In case you hadn't guessed, the expansion pack takes place in the desert. East Africa's desert, to be exact. You weren't expecting an Arctic or Alpine battleground with a title like Desert Siege were you? Those naughty little rascals, the Ethiopians, have invaded the tiny nation of Eritrea, necessitating the insertion of the Ghost Recon team to put an end to their devious ways. Just like every other first person shooter around at the moment, a beach assault level is included, which serves to land your eight man team in Eritrea. You won't be presented with the flouncy flower necklaces like those the Marines received when they stormed the beaches in 'Nam; this time round the greetings offered by your welcoming committee are comprised primarily of hot metal slugs.

Eventually you find yourself battling the bad guys in the Ethiopian countryside, surrounded by shanties, boulders and one hell of a lot of sand. The attractive Ghost Recon engine churns out these vast but sparse levels without any problem at all, and the enabling of mip-mapping via a Ghost Recon patch means there's none of the texture shimmering that was so evident in the original. To ensure your troops don't stick out like sore thumbs, your team is now decked out in full desert cam uniform. Your objectives on the eight new single player missions encompass the full range of spec ops duties, from capturing enemy head honchos, to taking out machine gun posts and escorting truck convoys through hostile territory. On veteran mode we found these missions surprisingly easy, allowing the completion of the expansion pack in under six hours. The enemy AI has supposedly been tweaked to be more cautious while under fire, as well as to make better use of grenades. However, only once during the entire eight missions was a grenade lobbed in my direction, although that might be because I was so good the bad guys were all cut down before they could get within throwing range ;)

This time around you'll find the enemy soldiers have finally got their P plates, as the occasional Ute loaded to the brim with baddies pulls a drive by. One of the most useful tweaks over the original Ghost Recon is the inclusion of a quick save/quick load feature, although this could be the reason we completed the game so quickly.

You're also given two new modes of multiplayer and four new multiplayer maps. The most enjoyable new multiplayer mode is the domination mode, where each team must control as many capture points on the map for as long as possible, leading to frantic yet rhythmic



① When covering fire is needed, the MG3 is the gun of choice

battles. The siege mode, which is also highly entertaining, sees one team defending an area as the other team tries to capture it. To help blast the opposing forces to bits you are also provided with nine new weapons.

While the new missions, multiplayer modes and weapons in Desert Siege are all going to be welcomed by the Ghost Recon community, the new campaign is sadly lacking in the length that is necessary to make an expansion pack a must-have item. When you consider that many games nowadays release new multiplayer modes free as part of a patch, the cost of \$50 seems a bit excessive. However, it's the only way Ghost Recon players are going to be able to play these new game modes once they've finished the new campaign, so we're sure it's going to sell well.

atomic
7 /10

GAME DETAILS

FOR: *Black Hawk Down* on a smaller scale; cool new multiplayer modes.

AGAINST: Short new campaign; only Desert Siege buyers will be able to play the new multiplayer modes.

REQUIREMENTS: 450MHz+ CPU, 128MB RAM, 16MB DirectX 8.0 compatible video card, 1GB HD space.

RECOMMENDED: 1GHz+ CPU, 256MB RAM, GeForce2 or better video card.

SOUND APIs: DirectSound

VIDEO APIs: Direct 3D

DEVELOPER: Red Storm Entertainment www.redstorm.com

PUBLISHER: Ubi Soft www.ubi.com

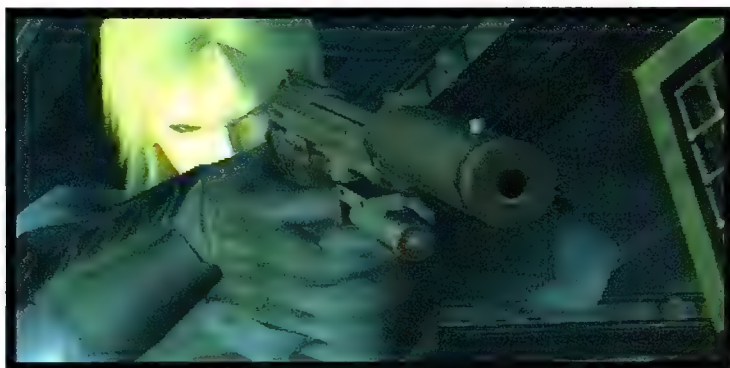
DISTRIBUTOR: Ubi Soft www.ubi.com

PHONE: Ubi Soft (02) 8303 1800



MGS2: Sons of Liberty

Bennett Ring finally gets his hands on his beloved Solid Snake.



① Using silenced weapons is definitely in your best interests.

From the very beginning of this game, when you are asked to select one of five options describing your experience of the previous MGS title, it is obvious that this is no ordinary computer game. Make sure you pick the right option because you might just miss out on the entire first level of the game — as we did the first time we started playing.

You'll begin your 'sneaking mission' as Solid Snake, who has just bungie jumped onto an oil tanker containing a payload much more valuable than black gold. Soon afterwards the brown stuff hits the spinning thing, and the game fast forwards two years, where you've donned the FOXHOUND armour of Raiden, a young soldier trained entirely in VR suites. You've been inserted into a facility known as The Shell, constructed to clean up the mess caused by the tanker accident two years prior. . . and where the President is being held hostage. Other than the tanker section at the beginning, the entire story is played out in The Shell, which is one of the only complaints we can make.

MGS2 easily takes the cake for having the most sumptuous visuals yet seen on any platform; and yes, that includes the PC. The tanker and The Shell are rendered to a level of detail unseen before, thanks to several field trips by the development team to real world locations. The weather effects are also quite simply astonishing. You'll see most of the action from a third person floating camera, but you can jump to a static first person perspective when it's time to start capping the bad guys.

The most impressive graphics are delivered courtesy of the lengthy cut scenes, which all use the in-game graphics engine. It's no exaggeration to say that these cut scenes come close to the graphics of the pre-rendered movie *Final Fantasy: Spirits Within*. Don't ask us how Konami managed to extract such awe inspiring visuals from the aging PS2, but it shows what this console is capable of when it's pushed to its limits. Some of these visuals are quite graphic, with blood pulsing in huge jets from sliced arteries and brains ejected thanks to a well-placed bullet, so it's definitely not a game for kiddies.

The gameplay is very similar to that of the original MGS, where stealth is essential. If you allow the alarm to be raised, you'll soon be wiped out by a special Attack squad of heavily armed guards, so it's best to rely upon your silenced weapons or choking manoeuvre to take out patrols. This style of gameplay might not be to everyone's tastes, but judging by the popularity of the series it has more than a few fans. There is also a wide range of new moves, including using enemies as a human shield or stuffing dead bodies into lockers to avoid detection.

Special mention must go to the storyline, which contains more twists than a hippie's dreadlocks, and also helps to develop some of the richest characters yet seen in a game. It also has to be said that it has moments of weird genital fixation: what other game has you dodging a



① The character models are simply astonishing

guard's wandering urine stream or a scene where the guy you just rescued tries to grab your character's testicles? At times it's all a little too bizarre, making the player realise just how different Japanese storylines often are when compared to those created by Westerners.

One of the greatest aids to building the high levels of atmosphere present in the game is the superb music, which was composed by Hollywood composer Harry Gregson-Williams, who worked on the soundtracks of *The Rock* and *The Replacement Killers*. Just like the visuals, this soundtrack performs a chokehold on anything you've heard before.

Perhaps the biggest complaint many will have with MGS2 is the amount of time devoted to cut scenes and conversations. In the ten hours it took to complete the game, around three full hours were devoted to such sections. However, we found that the overall effect of these helped to blur the boundary between games and movies in a way that will have you grinning from ear to ear.

MGS2: is ground breaking in so many ways, its stratospheric production levels have raised the bar for all games, regardless of platform.

atomic
9.5/10

GAME DETAILS

○ **FOR:** Jaw dropping visuals; gripping storyline; massively varied gameplay.

○ **AGAINST:** Limited locations; style of gameplay won't appeal to all.

DEVELOPER: Konami www.konami.com

PUBLISHER: Sony Computer Entertainment www.scee.com

DISTRIBUTOR: Sony Computer Entertainment www.scee.com

PHONE: Sony Computer Entertainment (02) 9324 9500

It's a lot easier to take on an army



when you are one.

DUNGEON SIEGE

A ROLE-PLAYING GAME FROM CHRIS TAYLOR

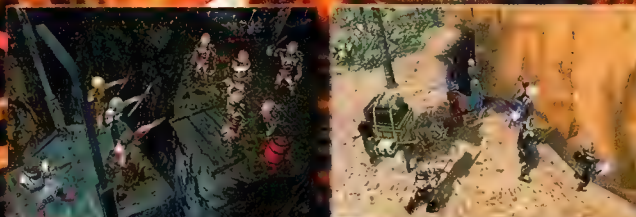
Assemble and control a party of up to eight heroes at a time, as you battle your way through the seamless and expansive 3D world of Ehb. From warriors and archers to wizards, and even pack mules to carry your treasure, you and your party will take revenge on the evil lord's minions. Whether you're playing alone or in multiplayer mode, victory is within your grasp. Let the battles begin.

microsoft.com/games/dungeonsiege



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GAMES

Microsoft



Command and Conquer: Renegade

It's time to rock 'n' roll with George Soropos in the C&C FPS.



① Open up and say 'aaaaaah'.

Smarting at not being included in George W. Bush's 'Axis of Evil' speech, Nod forces moved swiftly today to take key positions around the globe. Nod leader Kane blustered: 'The forces of Nod may not amount to an Axis of Evil per se, but at the very least we are a focal point of evil. Therefore, while we may not have the impact of an Axis of Evil, the overall effect of our presence including weekend activities, sponsorship agreements, and our interest in evil hobbies should have entitled us to at least an honourable mention.'

Of course the only person standing in Kane's way is you, Captain Nick Parker GDI Commando. Renegade will have you grinning from the very first moment you start to play. Just seeing all the buildings familiar from countless hours of C&C gaming right in front of you, big as life, is a kick in itself. However, the real fun in Renegade comes from the intense gameplay that puts you in the middle of well scripted, full-on combat situations.

You'll be kept on your toes throughout each encounter as Nod troops can parachute in anywhere at any time and Nod officers will keep calling in reinforcements while they live — if one is well hidden he can keep a battle going indefinitely. Fixed emplacements come in the form of cannon and machine gun turrets and the mighty Obelisk of Light.

Large buildings such as the Obelisk, Tiberium refineries and power plants can all be entered and sabotaged in true Tanya fashion. Which briefly brings us to the point of why Nick and not Tanya? Vehicles are drivable, if the mission allows it, and light tanks, Nod buggies, HumVees, flame tanks and Mammoths are all at your disposal.

Your commando also has a very impressive array of goodies to help the Nods part with their vital organs. Some are familiar like the flamethrower and chain gun but there are also many originals such as the Tiberium Flachette gun, Ramjet rifle and Mass Driver. There are twenty two in all, a nice round figure, and they offer some interesting variations on the typical FPS fare.

When it comes to shooting back, Nod AI starts out rough but gets better as you progress, which is more than can be said for your bot squadmates. Nod troops will do quick swivel spins to dodge your fire, duck behind cover when it's there and do a pretty good job of trying to kill you. On the missions where you get to baby-sit squadmates however, their AI makes them quite suicidal.

From a technical standpoint Westwood's own 3D engine falls a bit short of what many Atomicans look for in a game, i.e. a solid workout for their 4GHz, GeForce5 PCs. It looks acceptable when you're in the middle of an intense fire fight, so does it really matter?

Renegade's online play is ambitious in its attempt to fuse elements



① The infamous Obelisk of Nod is a structure to be feared.

of Tribes and standard FPS online game modes. Like Tribes, there is a base to defend with turrets and power plants.

You can buy vehicles, power ups and characters with the profit from your Tiberium refinery, which obviously is a prime target for your opponent. Ion and Nuclear strikes are available for your added enjoyment, and can only be stopped by an engineer wielding a repair tool.

However, at the time of writing, the online side of the game is still quite messy. Balance for the two sides is questionable at best, but nothing is static in PC land, so by the time you read this there will most likely be a few patches around to fix these problems.

Renegade has copped a lot of flack from some quarters, including a few right here at Atomic, but the bottom line is that it's fun to play — a lot of fun — and after all isn't that what games are supposed to be? □

atomic

7/10

GAME DETAILS

- **FOR:** Huge levels; C&C larger than life.
- **AGAINST:** No Tanya; unbalanced online play.

REQUIREMENTS: 400MHz CPU, 700MB HD, 96MB RAM, 16MB video, Win95/98/Me/XP

RECOMMENDED: 1.2GHz CPU; 128MB RAM; 64MB Video.

SOUND APIs: EAX, EAX 2, Miles

VIDEO APIs: Direct3D

DEVELOPER: Westwood www.westwood.com

PUBLISHER: Electronic Arts www.ea.com

DISTRIBUTOR: Electronic Arts www.ea.com

PHONE: Electronic Arts (02) 9955 7744

Star Trek: Bridge Commander



Des McNicholas takes the bridge in one of the best Trek games ever.



ⓘ Prepare to deal with an assortment of very trekkie weird alien heads on the screen.

Star Trek games have been a mixed bag over the years, with few managing to satisfy the hordes of fans that have grown around the various TV shows. With Star Trek: Bridge Commander, veteran space sim developer Totally Games (X-Wing, Tie Fighter) has ended the drought. Bridge Commander combines the intellectual atmosphere of the franchise with fast-paced action and presents the whole thing with excellent graphics, a good story and an outstanding command interface.

Bridge Commander puts players in command of the Star Ship Dauntless after the sudden death of her captain in a planetary explosion. Naturally, foul play is expected, and the rookie skipper is quickly on the trail of potential felons. Presented entirely from the Captain's perspective, Bridge Commander offers a unique view of the Star Trek universe. A new First Officer makes life interesting on the bridge, and some heavy handed help is available from the famous Captain Picard and other well known characters. Players navigate their way through a series of episodes written by veteran Star Trek author D.C. Fontana, issuing orders from the comfort of the captain's chair or by jumping in to take control at key points. Multiplay is supported via GameSpy, Internet or LAN, and a solid Quick Battle option is included.

Some players will be critical of Bridge Commander's linear campaign structure and the lack of open-ended exploratory missions, but the overall mix isn't too bad. A desk-bound Admiral at Star Base 12 initiates missions on the main viewer, specifying navigation details and broad objectives. Things tend to change a little on the fly, as it becomes obvious that other races have a stake in the outcome, and most missions involve combat. Multiple objectives are common and, although the lack of a quick-save feature leads to some annoying repetition, the diversity of mission types is impressive and the story is neatly unfolded through encounters with other ships and the odd cut-scene. On balance, the lack of campaign autonomy is more than made up for by the hands-on nature of command within missions.

Most shipboard Star Trek games have failed through a clumsy interface that didn't allow decent crew interactions and quick decisions. Totally Games has done an excellent job in this case, allowing players to exercise command from the captain's chair by looking at the relevant crewmember and issuing orders via mouse or keystroke. It works remarkably well, supported by an interactive menu that is available from all stations and viewpoints. Helm commands are passed directly to Ensign LoMar; the ship's status can be checked and adjusted through a quick chat with Chief Engineer Brex; and Lieutenant Savali implements tactical instructions. Commander Saffi Larson, the determined First Officer, handles communications with Star Fleet Command and keeps the ship humming and the crew in line.



ⓘ Trek space combat is unlike traditional space combat sims.

Bridge Commander's AI does a reasonable job, but the first-rate Tactical Mode gives players complete control during combat. Using an exterior view of the ship, players can control navigation, targeting and weapons, while adjusting sensors, overriding repair priorities and fine-tuning power distribution. Tactical Mode is compulsory in multiplay, and very useful during the single player campaign. A wealth of information sits on screen, including a target list that can specify an individual ship's systems; a graphical view of shields and weapon status; and a small sensor panel. Individual crewmembers can still be accessed in Tactical Mode, enabling sensor scans, probe launches or quick escapes.

Star Trek: Bridge Commander is the best in a long line of Star Trek games and one that should appeal to a much wider audience.

atomic
9/10

GAME DETAILS

☐ **FOR:** Great atmosphere; good story; and an outstanding command interface.

☐ **AGAINST:** Linear plot; no chance to beam down; and repetitive at times. More lip-synch training needed!

REQUIREMENTS: Pentium II 300MHz, 64MB RAM, 750MB HDD, 16MB DirectX video card.

RECOMMENDED: Pentium III 450MHz, 128 MB RAM, 32 MB video card.

SOUND APIs: DirectSound (8bit cards not supported)

VIDEO APIs: Direct 3D

DEVELOPER: Totally Games www.totallygames.com

PUBLISHER: Activision www.activision.com

DISTRIBUTOR: Activision www.activision.com

PHONE: Activision (02) 9869 0955

ICO

George Soropos holds hands with a real Princess in this puzzling adventure.



① The horny young prince carries wood for the beautiful princess.

Ico is a young village lad with a problem: he has horns. If young Ico had been born into our world he could have looked forward to a lifetime of bit parts in B movies, occasional talk show appearances and maybe even some product endorsements. . . But in his world it only means one thing: a trip to the big, dank, scary looking jar depository.

Some kids would be upset that their twelfth birthday present involved being stuffed inside a big pickle jar and left to die in an underground mausoleum, but not our Ico — he's made of sterner stuff.

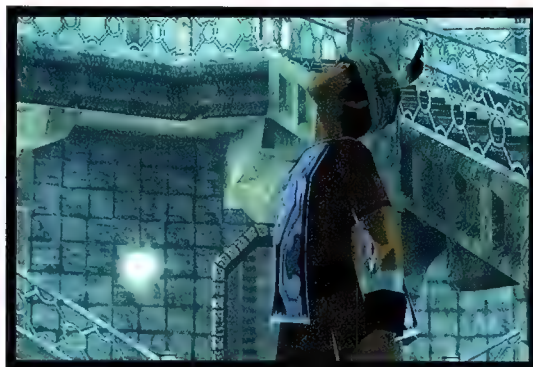
He also has a friend in the Princess Yoda, oops, Yorda. The relationship between these two characters lies at the heart of the game and one of Ico's few character controls, apart from the usual jump and attack, is a call which brings Yoda, sorry, Yorda to you, or if she's already there, she holds your hand. All together now: 'Ooooh. . .'. Holding Yorda's hand might seem a bit ripe but sometimes it helps when you're fighting certain creatures because this simple action combines the two characters' strengths.

Ico's developers have obviously made a conscious effort to create something original and unique in this game. While there are elements of Tomb Raider, Prince of Persia, Myst and even Panzer Dragoon, they have been stripped down to the bone and distilled into a fine essence that we could call 'game art', if we were the sorts of people that wear skivvies and drive Saab convertibles.

The term 'streamlined' is a perfect description for how Ico looks and plays. There are no life bars, powerup metres or even levels to deal with — in fact, there is as little as possible to remind you that you are playing a game. Puzzles make up the other half of the Ico experience and there are plenty of them. Their variety and difficulty add greatly to the time spent playing the game, however this works against you if you want to play through a second time. The average gamer will take between five to six hours to finish Ico the first go (this short play time being one of the game's weaknesses) but when you know the puzzles, that time cuts down to only about three hours.

When Sony was hyping the PS2 prior to its release, one of its selling points was the machine's 'emotion engine' (read graphics chip). Sony's game developers in Japan have tried to live up to this hype by basing Ico around its two main characters — and the relationship between them — as the game progresses. As a result, playing Ico is quite a different experience than playing a typical exploration/puzzle game. Helping the helpless Yorda through the dangers of the game is supposed to make the player form a bond with the characters, which becomes part of the reason to keep playing.

It works as long as you're prepared to let yourself get lost in it, which isn't that hard to do considering the superbly crafted graphics and audio.



① Don't look down!

Ico's game world is an atmospheric masterpiece with the most detailed graphics ever seen on a console system. Light and shadow are used with an artist's eye (we saw an artist's eye once, so we know) and the minimalist soundscapes complement the gorgeous visuals perfectly.

The jar depository where the game begins is eventually revealed as part of a huge castle, a structure captured so perfectly by the game's artists that it is almost a character in its own right. The sights available around the castle, and particularly beneath the castle towards the end of the game, are absolutely stunning.

Playing Ico isn't all exploration and puzzles: a generous amount of combat is also included to spice things up, but even when fighting you'll have to use your noggin and reach for the right weapon at the right time.

Ico isn't a title that will appeal to everyone, as it is rather short and very stylized. Without wanting to sound sexist, it will probably appeal to female gamers more than blokes but hey, if you're bored with games at the moment you might get something unexpected from it.

atomic

8/10

GAME DETAILS

□ **FOR:** Original, atmospheric gameplay; character based as opposed to story based.

○ **AGAINST:** Short (5-6 hours) duration and very limited replay value.

DEVELOPER: Sony Computer Entertainment www.scee.com

PUBLISHER: Sony Computer Entertainment www.scee.com

DISTRIBUTOR: Sony Computer Entertainment www.scee.com

PHONE: Sony Computer Entertainment (02) 9324 9500

State Of Emergency

Fight the power! Screams John Gillooly as he throws another garbage can.



① The sheer volume of onscreen characters is an amazing technical achievement.

I think we have all at one point or another wished we were a large tough Hispanic Gangsta named Spanky. At least I hope I am not alone in that regard. Thankfully our prayers have been answered by VIS Entertainment and Rockstar games in the form of State Of Emergency.

Not wishing to shy away from the stink caused by its last title, Grand Theft Auto 3, Rockstar has delivered a unique game concept: a rioting game. You take the role of one of five different characters dragged into battle against the evil Government of the future: The Corporation. Your task is to bring down this example of capitalism gone wrong, largely through bludgeoning most of its security staff to death.

Don't expect a gripping storyline or anything like that. State Of Emergency features two game modes: Revolution and Chaos. The former has you completing a series of missions in the midst of full scale riots over four different locations, while the latter has you causing as much mayhem as possible in the midst of full scale riots over four different locations. Revolution's mission structure is nothing sophisticated, with it quickly becoming apparent that you are in for an endless stream of 'escort X and Y from point A to point B' or 'kill so and so before they escape' missions. This becomes very tedious very quickly. Chaos on the other hand delivers a bit more longevity. This is essentially a free for all, where you push for high scores by beating, blowing up, smashing or slicing anything owned or employed by The Corporation (don't hurt civilians because you may lose a couple of points).

At heart this game harks back to the old style of beat-em ups: those side scrollers such as Double Dragon and its ilk. You have some simple moves — punch, kick, grab and a spinning attack — and a host of weaponry to pick up and wield against the Corporation soldiers. The weapons range from baseball bats and clubs, to flamethrowers, miniguns, rocket launchers and even the decapitated heads of your enemies.

Where State Of Emergency excels is in the visuals. The proprietary engine used by developer VIS Entertainment manages the unenviable task of having literally hundreds of characters on screen in full 3D at once, and does it without any noticeable hit to the framerate. To achieve this, the hordes of rioting civilians are fairly simply modelled and textured, but in the overriding chaos you really don't notice.

The game is played in third person, and the camera control is decent but still falls over when you quickly shift direction, which becomes a major problem especially when you are trying to quickly turn back and send a hail of bullets towards pursuing enemies. This all becomes irrelevant when the fighting gets in close, as it quickly degenerates into a button mashing fight for survival, largely due to the sheer numbers of enemies headed your way. At times, you will be simultaneously trying to battle a dozen or so riot police, gang members and the occasional lone lunatic.



① Spanky blows up another building in the pursuit of anarchy..

This is where the game falls down: there simply isn't that much depth beyond the fist fighting and window smashing. With only four levels to choose from, gameplay soon becomes repetitive and downright boring, and you can only take so much button mashing before it all becomes too repetitive. Even the slight differences between each of the five characters aren't enough to provide the game with much replay value.

Despite the superficial similarities, this is not the masterpiece that GTA3 is. In fact, apart from the amazing technical feats, it isn't really that enjoyable a game for extended play. It is, however, one of the most gratuitously violent and gore-laced pieces of code to hit the PlayStation 2 to date, with it getting to the point of even the most cynical, jaded and hardened gamer thinking it is just too much.

Some people will like walking away from a 15 minute game with over 400 kills but there is a point where it all becomes way too excessive. This is definitely not a game for kids or those who are faint of heart, and the complete lack of anything gripping in the long term gameplay department means that it is not so much a bad game, just a very pointless and short-lived one.

atomic
6/10

GAME DETAILS

○ **FOR:** Huge numbers of onscreen characters.
○ **AGAINST:** Only four levels, uninspired missions, repetitive gameplay, low replayability.

DEVELOPER: VIS Entertainment www.visentertainment.com

PUBLISHER: Rockstar Games www.rockstargames.com

DISTRIBUTOR: Take 2 Interactive www.take2.com.au

PHONE: Take 2 (02) 9482 3455

Ace Combat: Distant Thunder



Des McNicholas is blown out of the sky by Namco's explosive effects.



① A terrific mix of aircraft is available, including improved versions of today's fighters.

Released overseas late last year as Ace Combat 4: Shattered Skies, Distant Thunder was better received than most console flight sims. The delayed Australian launch was worth the wait, with developer Namco producing a first-rate mix of arcade action and campaign storyline. Serious simmers will doubtless find plenty to pick at, but they will still have to acknowledge (grudgingly) the consistently high frame rates, excellent ground detail, and well-modelled aircraft. Despite being an unashamed arcade title, Distant Thunder takes console flight sims to a new level, offering value to newcomers and veteran pilots alike.

Distant Thunder puts players into the role of Mobius One, a pilot fighting a savage war in fictional Eugea. Set in the near future, the story unfolds through the eyes of a young boy with memories of the invasion, using a still-image style similar to that seen in Microsoft's Combat Flight Simulator 2. Too heavy a plot can sometimes weigh down action titles but it works exceptionally well here by guiding players through the single 18-mission campaign. Although paced along standard arcade lines, the missions offer plenty of variety in both locations and objectives, with the enemy throwing up layered aircraft and missile defences to protect critical facilities.

Weapons come in four basic types: guns, missiles, smart bombs and dumb bombs. As usual in arcade titles, ammunition stocks are high and running out isn't a problem on most missions. Given that Namco included the opportunity to return to base and re-arm during engagements, it's a little surprising that a more realistic weapons' system wasn't used. Some missions become drawn out shoot-fests, as pilots don't need to worry about saving ammunition for critical targets. More advanced weapons and aircraft become available for purchase as the game progresses, and players are able to match payloads to the mission objectives.

Missions begin in the air, preceded by a short briefing and map of the target area. The skies are usually filled with friendly aircraft but cooperative wingmen don't play a big role in the action. Secondary targets tend to appear on the way to primary objectives, giving players a chance to get some practice in while watching Namco's excellent explosive effects, and transit times are short. With the exception of guns, automated targeting does most of the work, allowing players to simply line up and press fire. The enemies are not too bright, but their sheer numbers pose a decent challenge and they're hard to shake once they latch onto your tail. Excitement is hyped through terrific music and an enormous amount of well-acted radio traffic, including enemy conversations and desperate warnings.

Distant Thunder's straightforward control system is generic across all 21 flyable aircraft, and the on-screen interface is well presented and generally sharply defined. Flight controls are essentially limited to altitude



① A console flight sim with a virtual cockpit — what next eh?

and direction via the analog sticks, with acceleration mapped to the L1 and R1 buttons. The system offers a surprising degree of control, although purists will be disappointed with the lack of fine-tuning options and the similar flight characteristics of most aircraft. On-screen information includes basic navigation information, a radar map toggle, aircraft and weapon status, targeting displays and ammunition levels. The map detail is a little fuzzy and very dependent on TV quality, although the presence of a target indicator helps to keep things on track.

Distant Thunder is the best flight sim yet developed for a console, and one that will be difficult to top in the near future. It comes close to equalling its PC cousins in some technical areas, bringing high levels of terrain and model detail, an explosive soundtrack, and first-rate special effects; this is indeed one very pretty game. The campaign story hangs together nicely, the voice acting is well above average, and the missions offer excellent replay value with different aircraft. Ace Combat: Distant Thunder is a simple, easily accessible game with a surprising amount of depth. Think of it as Namco's Moto GP of the air!

atomic

9/10

GAME DETAILS

○ **FOR:** An outstanding mix of arcade and simulation gameplay. Great mix of aircraft and solid multiplayer.
 ○ **AGAINST:** Excessive ammunition supplies and some repetitive missions.

DEVELOPER: Namco www.namco.com

PUBLISHER: Sony Computer Entertainment www.scee.com

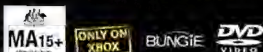
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I-O a debt of gratitude

Consoles are like telephones: they never break! Boring! PCs, on the other hand, break all the time! How cool is that! Dear Doc Dan Rutter is down with his phat love to help. IOTM this round gets the spanko Debut case from Dilithium (www.dilithium.com.au)!



When you turn off your PC, your CPU

immediately stops producing any heat. It'll still be warm, of course, but there's no new heat being emitted.

The total amount of heat energy in the computer will now slowly decrease, as convection and entropy do their respective things.

If the fans kept running when you powered the machine down then the PC would cool off a lot faster. But this doesn't matter; the computer put up with all of its components being at whatever temperature they attained while it was turned on. With it off, they can all only get cooler, and it doesn't really matter whether it takes them 30 seconds to cool to ambient, or three weeks. There's nothing in there that's hot enough that you need to keep blowing air over it to save the components nearby from heatstroke.

I'm trying to figure out now why you might read a higher CPU temperature when you turn the computer off and shortly afterwards back on again.

One way I can see it happening is if you're reading the CPU temperature from a thermal probe that's not particularly connected to the CPU core temperature — if, for instance, the probe's right out on the edge of the CPU cooler base, or half-way up a fin, or somewhere where the CPU cooler fan blows directly on it when it's running.

If it's in such a position, the probe **will** see a rising temperature after the CPU fan stops spinning, despite the lack of new heat coming from the CPU. That's because the heat still in the heat sink will spread out more evenly through the whole thing, now that the normal sharp thermal gradient with distance from the heat-injecting contact point hopefully has the chance to even out somewhat.

Maybe the CPU briefly runs at absolute maximum power on power-up, and that's enough to make a difference; most processors average a power level nowhere near their peak during normal use.

Or it's possible your PC simply gives you goofy readings when it's just been powered up.

Motherboards are complex and thermal diode calibration can be lousy. I haven't heard of this phenomenon before, but then I haven't looked for it either.

In brief, though, a 'turbo timer' system to keep any of the PC's fans spinning for a while after power-down isn't really necessary.

The core temperature of the CPU definitely starts to fall from the second you turn it off. If that's not what happens, various physicists who've been dead for about 200 years will be very angry with you.

It's possible that the new Aluminium case you just won will help. Don't give up! ▸



IOTM: CPU turbo timer?

I've got my 1 Gig Athlon running at 1.2GHz and it's now generating more heat as can be expected. But here's the rub: when the PC's running the fans are turning and everything is getting cool air, BUT if I do a shutdown all of a sudden the processor heat sink is required to get rid of all the latent heat WITHOUT fan assistance.

Would this not stress the CPU?

It's easily noticeable on my over-clocked system by doing a reboot and seeing that the CPU temp is actually increased by turning off the PC.

What we need is a delayed power off for the CPU fan.

Have you guys ever heard of just a thing? Maybe I should design one.

Nic Beavis

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i USB networking?

I want to be able to transfer some info from mates' computers so I can burn CDs for them. I wanted to know if I can use a USB cable with two A-Ends on it to do this, and if so, do I just plug it in and it works? I am thinking of using USB at present as I can get the cable for \$9, which would make a cheap way of transferring files.

Greg



ABOVE: They're expensive, but at least they're slow.

USB-to-USB data transfer devices do exist: they're known as 'USB bridges'. They either have an A connector at each end of a cable with a widget in the middle that lets it work for basic network functions, or they're a box with a couple of USB sockets on it, which you hook up to two PCs with normal USB A-to-B leads. Plain A-to-A leads with a male plug on each end shouldn't exist; if you find one and plug two computers together with it, all you'll do is blow fuses.

To use a USB bridge, you have to install the special software that comes with it, and you can't use it to connect to an ordinary Local Area Network (LAN). But USB bridges *normally* only cost about \$50, if you can get one for \$9, and if the software works with the Windows flavours you're using, then what the heck. The better versions of these things give you what behaves like a proper LAN connection between the two machines, so you can transfer files, share printers, play games and so on. Simpler versions just work like a LapLink connection, for basic file transfer and maybe printer sharing.

A more useful solution is a couple of proper PCI network cards - you can hook up your own little two-node 100BaseT Ethernet LAN with a simple crossover cable, and the two cards plus the cable should cost less than \$80. A 100BaseT LAN connection will let you shift 100MB in less than 15 seconds; a USB connection will give you less than a megabyte per second. USB version 2 is much faster, but I don't know of any direct networking products for that standard yet, and your computers probably don't support it anyway.

Alternatively, you can get USB Ethernet adapters, which are as easy to install as one of the special USB data transfer devices but which give you a normal RJ-45 connector that lets you hook up to a regular LAN, or crossover-connect two computers. USB network adaptors cost more than \$75 each, though, and they're no faster than the special cables. Again, USB version 2 promises to solve the speed problem.

i Unpunctuated upgrade

I have an Athlon 1.1GHz CPU and a Gigabyte 7zx-h motherboard and they suck. My PC is slow and crap and it jerks and stuff. I know that my video card is also crap, but when we put it in my friend's computer — a Pentium 3 550MHz — it ran better than my Athlon did. I'm wondering what you'd recommend for a good CPU and motherboard for no more than about \$500?

David Fleming

The PC certainly shouldn't be doing this, and I doubt it's a hardware problem.

My first thought was that David hadn't installed the VIA '4in1' drivers for his KT133A-chipset motherboard, but he then assured me that he had, and also the current drivers for his GeForce2 MX200 card. Apparently, games like Black & White run OK 'for like 10 mins' but after that it will jerk slightly.

This changed my suspicion about the nature of the problem: now, I think it's some background application. The old favourite in this department is the Find Fast utility from versions of Microsoft Office before Office XP. This will start flogging away at your drive when it thinks the computer's unattended, and playing a game can look like doing nothing from Find Fast's point of view. Office XP has a 'Fast searching' feature that does much the same thing, and a quick Web search will tell you how to disable all members of the Find Fast family.

Find Fast is just one application that can cause lousy performance: there are lots of others that can do it too, and there are various ways in which your Windows configuration can be screwed up that can produce similar problems. A major upgrade will solve these problems, but only because you've reinstalled Windows. The cure will only last, of course, until you reinstall whatever it is that's causing the problem now.

i Lucky bastard

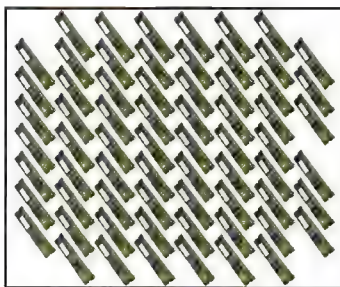
It's Tuesday of last week and I go into the local Harvey Norman computer store in town.

I say to the salesman — it looks as if he just started working there, as he has another salesman helping him — that I need some computer memory. The other salesman says he has to help someone else. So the new salesman and I go over to the glass cabinet where all the PC memory is stored, in boxes big enough for a motherboard. The guy hands takes a box out and says that my 256MB SDRAM will be \$95, so I hand the money over. He scans the box and puts the whole box into a carry bag, hands it over to me, and says, I repeat, says: 'Have a good day!'

I slowly walk out of the store and down to the corner and then run like almighty hell to get myself home.

So I get home, and this box has 67, yes 67, 256MB PC133 SDRAM modules in it.

Paul Mason



16.7GB for the price of 256MB.

You know, at this point I'm probably meant to say something about fair trading legislation, laws that use the term 'good faith' and how 'finders keepers' often doesn't work too well in the real world — particularly if you brag about your windfall to thousands of Atomic magazine readers.

Bugger that, though.

SCORE, mate!

Persons needing to convert dozens of memory modules into hardware they actually want may find ebay.com.au to be helpful.

Poor example

Hi. I usually send around five emails per day, but recently I've been unable to send email through any of my POP3/SMTP email servers. I've tried using both MS Outlook Express and Outlook XP on Win XP Professional, but I keep getting the same error message: "The message could not be sent because one of the recipients was rejected by the server. The rejected email address was 'fcaris@example.org'. Subject 'Re: example...', Account: 'fcaris@Optusnet', Server: 'mail.optusnet.com.au', Protocol: SMTP, Server Response: '550 5.7.1 ... Relaying denied. IP name lookup failed [203.134.130.20]', Port: 25, Secure(SSL): No, Server Error: 550, Error Number: 0x800CCC79".

Could you please tell me what the smeg this error message means and how the smeg can I fix it!

Fabio Caris

Someone, somewhere - possibly you, since it's your name on the front of that email address - is trying to send mail to example.org, and that ain't ever gonna work.

You can't send mail to anybody at example.org, because "example.org" is not a normal domain name. As you'll see if you point your browser to www.example.org, example.org and .net and .com are specifically reserved for use whenever you need a generic domain name for use within documentation. Whenever you're telling someone how to do some Internet task that can be done with any arbitrary domain name, you should use example-dot-something as the domain name, for the same reason that you see 'John Q. Citizen' as the name on documents in advertisements. Use example-dot-something and people won't be testing stuff, possibly in annoying ways, on domains that belong to someone.

Brand name PC problem #28736

I'm trying to get my Seagate Barracuda IV 40GB HDD to run on an IBM Aptiva 2187 15A. I get a 'primary master disk failure' when the computer boots, and if I set it the jumpers to slave the computer freezes while detecting the IDE devices!

I think the mobo is an SiS 530 — that's what it says on the Northbridge heat sink.

The HDD works fine on other computers, although all those are DIY computers. . .

Altan8

This could have something to do with the fact that, with its standard BIOS, the Aptiva 2187 (and a number of other Aptivas of similar vintage) can't properly recognise drives that are any bigger than 32GB. Apparently, you can fix this problem with a quick and easy BIOS update. You can find a BIOS-update-floppy-maker for the 2187 at this address:

[ftp://ftp.pc.ibm.com/pub/pccbb/s/aptiva/b7jt00a.exe](http://ftp.pc.ibm.com/pub/pccbb/s/aptiva/b7jt00a.exe)

...and installation instructions here:

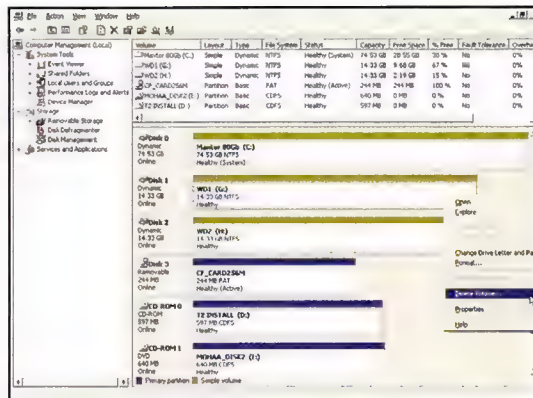
[ftp://ftp.pc.ibm.com/pub/pccbb/s/aptiva/b7jt00a.txt](http://ftp.pc.ibm.com/pub/pccbb/s/aptiva/b7jt00a.txt)

IBM's support site (www.ibm.com/support) is actually pretty good for stuff like this. It's something of a pain to navigate, but there has to be some penalty for using a brand name machine.

Hard drive help

I've just built a new PC with Windows XP and a 60GB unpartitioned hard drive. I also want to put my old 6GB drive in this PC, but my old drive already has C, D and E partitions on it. My new drive's got a C partition as well, of course. What will happen if I add the old drive to the new PC? Should I low level format it and repartition it?

Peter Whitehead



ABOVE: Win2K and XP make it easy to repartition drives.

Your new drive isn't 'unpartitioned' — it just has ONE partition. 'Partitioning' is the process of making formatable logical volumes (C:, D:, E: . . .) on a physical volume (an actual hard drive), so an operating system can stick some filesystem or other that it understands on them. When you format a drive, you're putting a filesystem on it. If you haven't made at least one partition beforehand, there's no drive to format. In the olden days before stone was invented, you used to be able to 'low level format' (LLF) hard drives, which rewrote the basic location marker information on the drive. If a normal format paints the car parking spaces on the parking lot, an LLF resurfaces the bitumen.

For some years now, though, hard drives have stored data at such high densities that their read/write assemblies aren't able to do a proper LLF — the pen nib's too thick, as it were. Modern drives may still accept an LLF command, but they immediately report that the format's complete and don't actually do anything. There was a period some years back when some drives were already high enough density that they couldn't do an LLF properly, but they'd try. You don't need to bother with this, because partitions on drives don't have a drive letter intrinsically attached to them. The computer just assigns drive letters in order. Primary partitions — the first partitions on each drive — get first dibs, starting from the primary partition on the primary master drive. Then the extended partitions get drive letters in turn. So if your current boot drive is the primary master, plugging in your old drive on any other IDE location won't cause a problem, getting D, E and F assigned to its partitions. Most drives these days just have the one partition. Once you've removed any data you want to keep from your old drive, repartitioning and reformatting it to just one partition's not a bad idea. You won't be using the old filesystems that dealt poorly with 'large' partitions.

WinXP makes this simple: go to Control Panel -> Administrative Tools -> Computer Management -> Disk Management. Then right click on the devices to see your options.

Teach a new dog new tricks

Alex Kidman puts on his white Veterinarian's coat and warm latex gloves before subjecting the pedigree robot doggie to a series of humiliating tests, all in the name of science.

WARNING: This feature contains some AIBO nudity.

When Sony launched the AIBO, its ideas for the little robot doggie were pretty simple. It plays, it learns over time, and people who don't like the messy aspect of pets can grow attached to a lump of plastic and silicon. Somewhat akin to RealDoll. . . but presumably without the sex.

AIBO is still a computing device, and with enough effort — and enough time — any computer device can be modified, and that's exactly what happened with AIBO. There's yet to be a really good hardware modification for AIBO — although someone has probably stuck a gun on top of one by now — but software is another matter entirely.

The owner of Aibopet.com — who goes by the mysterious name of Aibopet (it's unlikely s/he had very cruel parents) has released a number of interesting software hacking utilities for AIBO. If you think about doing it to an AIBO, chances are that it's been done, or is available on Aibopet.com. So as much as I'd like to herald myself as the inventor of everything over the next couple of pages, it ain't true. Credit where credit's due, and all that.

Sony's response to the AIBO hacking phenomenon has been interesting. At first, it took the standard corporate: 'We will sue you into oblivion' line, but protests by AIBO owners saw it mellow its stance to a begrudging acceptance of Aibopet's work. In fact, a lot of what Sony has since released bears a striking similarity to some already available hacks, although Aibopet notes that it is flattered by this, rather than outraged.

Hot under the collar

Part of the reason AIBO is so easy to reprogram is that Sony chose to use — and promote — its Memory Stick technology as the medium for AIBO's software installation. Unlike a hardwired ROM chip, which would need to be manually scanned/flushed each time via a hardwired connection, Memory Sticks can just be plugged into any compatible



reader. Sony has made some effort to stem the tide of shady software: AIBO himself will only recognise AIBO-specific Memory Sticks, essentially those with a write protected decryption/boot area on them. Normal Memory Stick readers don't think like that, and can't actually see the write protected bit, so formatting an AIBO Stick is akin to taking AIBO out to the shed with a double barrelled shotgun.

So, what's under the hood of AIBO?

Warning: The following is not for the faint hearted, easily scared or anyone who currently loves an AIBO. There's also a fair bit of AIBO nudity, too.

The first tool you'll need to take AIBO apart is incredibly high tech, and may take you whole seconds to find. A paperclip, or similar straight bit of metal is needed to push in the release clips for AIBO's legs.

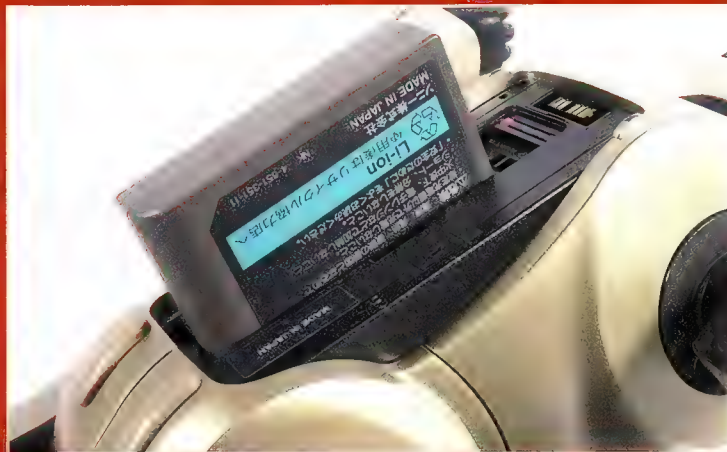
This is incredibly simple, because Sony actively wants you to be able to take off the legs: it's part of how you insert the wireless LAN card, which goes into (and there's no pretty way to say this) AIBO's arse. Someone at Sony has a sense of humour, albeit a very scatological one. Or maybe that's me. In true proprietary closed-system fashion, you can't just chuck in any old 802.11b card — AIBO will only recognise the official \$390 AIBO 802.11b card.

Tragically, Sony has seen slightly twisted people like myself off at the pass. If you power up AIBO sans legs, he doesn't sit there and twitch like any self-respecting zombie corpse, he simply plays a sad tune and shuts down. Even covering the leg sensors isn't enough to bring AIBO back from the grave.

The other easily accessible area in an AIBO is the battery slot, and it's my least favourite part of AIBO. 'Why?' You may ask. . . Because it's covered by a very flimsy plastic latch. Nothing specifically wrong with plastic latches, but this one feels like it may fall apart at any moment, and that feels wrong to me on a \$3,000 robot dog. When it does break it's not going to take the AIBO down because the battery and Memory Stick are held in place by spring release catches, but it ruins the aesthetics if you like picking up AIBO. The battery compartment is also where Memory Sticks fit, and, if you're not careful, where



ABOVE: This pink Memory Stick is 100% robot doggie brain you're looking at!



ABOVE: Real dogs don't leave presents like this on the pavement.

ABOVE: Even the battery is custom, so no attaching jumper cables to AIBO will be tolerated.

Memory Sticks go to die. When AIBO powers down, he writes to the Memory Stick. Each write sequence has a small beep tone to indicate that it's happening, followed by a slightly higher pitched but similar tone to indicate that it's finished. Once the higher tone plays, it's safe to remove the Stick. For some packages, it's a single tone-response sequence, but others require up to ten tones before the safety beep is heard. All the time that the Stick is being written to, it's possible to remove it and therefore mess up AIBO's memory. The lesson here is simple. Back up, and back up frequently, as it's all too easy to mistake one beep tone for another.

The rest of AIBO is sealed quite tightly, but pictures of the insides of AIBOs have appeared on numerous Web sites. Check out www.nnc.or.jp/~as212/aibo/x-ray.html for some great X-Ray photos of a complete AIBO, and Aibopet.com has the internals laid out — if shots of processors get



'a much more menacing looking AIBO with brighter eyes – great in a 'spooking people in a darkened room' kind of way'

you hot under the collar.

Under the hood, AIBO's running a 200MHz MIPS processor and 32MB of quite standard SDRAM. You could build these bits yourself if you so cared. The processor is a QED 200MHz MIPS RM5231A-200H Processor and the memory is NEC D4518163G5-A80 in two 16MB banks.

What you *can* get to with practically no effort is AIBO's tail, and the sensor that lies underneath it. AIBO has a sensor on his back that always seems a little unresponsive. All that plastic connects to this tiny sensor on the control board. It also means that the scolding and praising actions relate to the amount of time he is pressed — a short sharp hit is a scold, whereas an appreciative stroke will be longer.

How does your dog smell, then?

AIBO's camera rests under a piece of smoky plastic that's almost ridiculously easy to pop off. The camera itself is sealed, and short of taking to it with a pair of tinsnips you're not going to get to it. What you can do is leave the plastic sunroof off, resulting in a much more menacing looking AIBO with brighter eyes – great in a 'spooking people in a darkened room' kind of way.

Although Sony Australia doesn't sell them locally, there are other AIBO models on the market, and it's possible to play dressups with the legs between the 210 and 220 models. The internal composition of the 210 and 220 models is identical, although a firmware upgrade is required to run the slightly different legs and sensors of the 220 model, which abandons the doggy motif in favour of something that's definitively more Cylonic in flavour.

Hacking AIBO the Sony Way

If you've seen or read anything featuring AIBO, chances are it was running AIBOLife. AIBOLife is the AI software that makes AIBO into what is essentially a much more complicated Furby.

Comparing AIBOLife to a Furby may sound cheap, but the software for both still does essentially the same thing: reveal new functions — masked by both as growth stages — as time progresses. Notably with AIBOLife, there are multiple branches of the evolutionary tree to climb, and how AIBO is treated (and finds his environment) determines which branch he'll wander down.

The previous models of AIBO used to come with AIBOLife as standard, but later models — like the 210 — don't come with any software at all. Sony's line is that it promotes choice, but what are you going to do with a robot dog with no software?

The software for AIBOLife comes in the form of a custom AIBO Memory Stick. Although you can download AIBOLife from the Web, it's useless without a custom Memory Stick which contains the correct boot files.

AIBOLife is quite compelling to watch for a while. The AIBO Sony sent me was already an adult, but a quick software hack (see 'Pass me the spare brain, Igor') soon devolved him into a simpleton. From baby stage, AIBO can do very little, but give him enough time and enough stimuli and he'll start 'growing'.

As I write this, AIBO is messing around on the floor trying to hump a PlayStation controller he hasn't seen, what with it not being pink. Perhaps he's just being friendly to another Sony product. Bad AIBO.

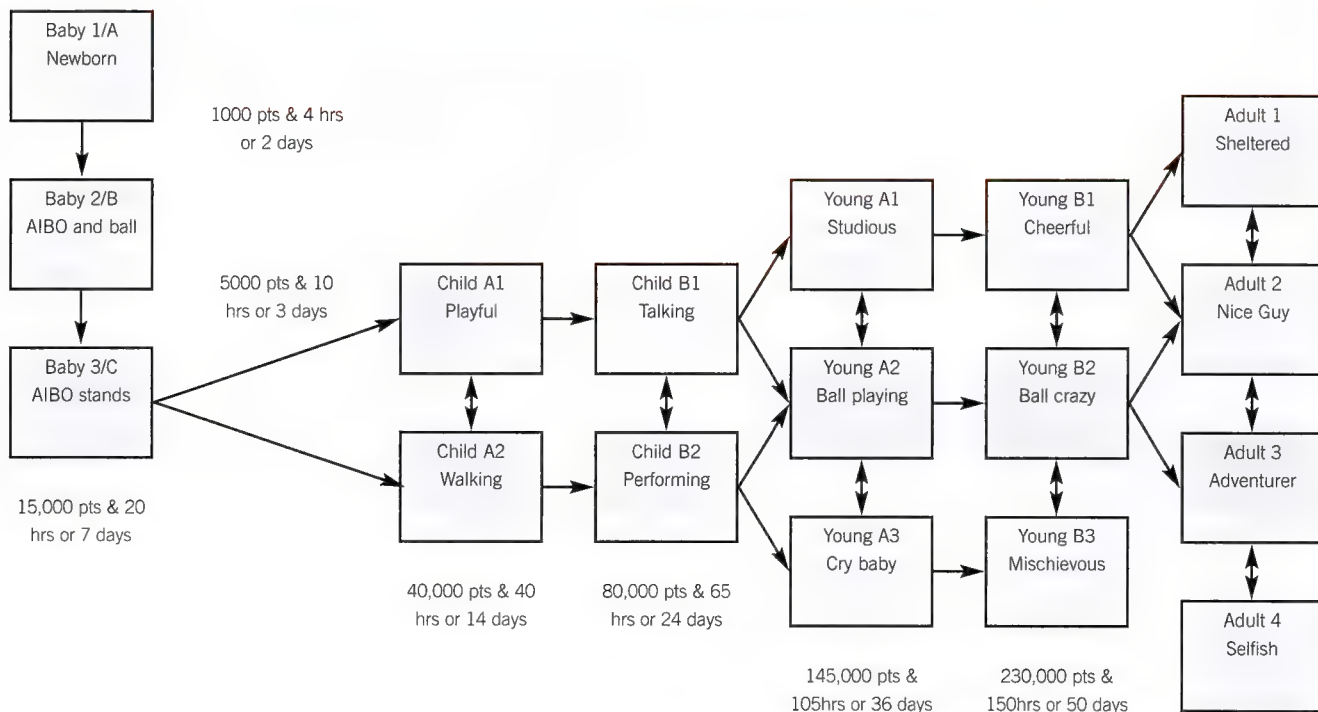
It's quite easy to see how people become attached to AIBOLife, as the models for the different stages map against how you'd expect any newborn to learn and adapt. There's also a subtle bit of owner programming going on: it takes time to learn how to interpret all the different AIBO beeps and body mannerisms, which forces you to pay attention and bond with your new robotic pal.

AIBOLife RRP: \$320

AIBOLife evolution explained

As AIBOLife is played with, and as his internal clock ticks ever onwards, he evolves along a series of stages as mapped below. Give him enough time and he'll do all the evolving himself, but how you treat him will affect which branch of evolution he goes along.

AIBOLife 2 Evolution (ERF-220AW01) using official names



'points' are experience that increase as you interact with AIBO

Evolve if: ((experience >= ? point) AND (realtime >= ? hours)) OR (days_played_with >= ? days)

The day count is a maximum number of active days AIBO will stay at that stage before evolving (regardless of experience points or time spent).

Grey lines are personality type changes that can happen at any time.

Break-even 'Quality Factor' varies by stage

Totals are cumulated, unlike the ERS-111 or ERS-210

I like to move it, move it

AIBO Navigator is an application that allows AIBO to be remote controlled. Like AIBOLife, the core software comes in the form of a custom Memory Stick accompanied by a Windows CD-ROM. In a nice touch, all the sound samples in Navigator are menacing beeps and submarine-esque tones, which greatly add to its appeal.

Setting up AIBO Navigator involves opening AIBO up, shoving an AIBO-specific Wireless card where the sun don't shine and configuring a wireless network from a host PC. Sounds simple in theory, but like most wireless networking it can be a headache. The AIBO provided by Sony was preconfigured, but a quick bit of erasing soon had us right back at stage one. From there it was a matter of detecting AIBO, which took several notebook and AIBO reboots to actually happen.

Studio also accepts wireless transfers for entirely new programs. So, all you'd need to do is find someone with an AIBO, spend the time writing a program to make AIBO unlock all the window latches, get the bag labelled 'swag', and before you know it, AIBO's face will be plastered up in post offices everywhere.

All you do is talk talk.

OK, so AIBO's a fun party piece, but AIBO Messenger takes the cake in terms of odd software. AIBO Messenger works via wireless LAN and your PC to read your email and remind you of appointments. In effect, it turns AIBO into a talking PDA, while removing AIBO's core appeal — he no longer walks. Now, it all works, and works rather well — as long as you're using Outlook or Eudora — but I still can't quite figure out the point. AIBO's battery still only lasts a touch over two hours, so even if you kept him by your desk he'd still have to go offline to charge every couple of hours. Good as a single joke party piece, but a party piece you could do just as well with any number of freeware talking email applications. AIBO Messenger RRP: \$320

'AIBO Messenger works via wireless LAN and your PC to read your email and remind you of appointments'

Navigator allows you to take advantage of AIBO's inbuilt camera to take photos. Sony seems to be nervous about this feature: the manual has a full disclaimer about Sony not being responsible for you taking photos without permission. A little paranoid perhaps, but then again you're talking about a small cute robot capable of wandering up to women in skirts and looking up. Ahem. Indeed.

The main Navigator window (pictured) allows AIBO to be controlled by mouse, keypad or game pad. The difference between all three is negligible. Although 10MB is a big data channel, the lag between control and response is noticeable — it's not like you're racing a remote controlled car here. When you watch via the navigator camera, it's initially a bit confusing, as the way AIBO uses his legs to turn means that he tilts to the left first before turning right, which makes you think you've pressed the wrong button.

Aibohack.com does offer a free alternative to AIBO Navigator, called AIBO Remote. While the Web page screenshots appear to show much the same functionality as Navigator, the same wireless detection problems reared their ugly little RF heads, and AIBO was never successfully detected, so testing both utilities side by side was impossible.

AIBO Navigator RRP: \$320



ABOVE: AIBO Navigator's panel, the camera and radar are too cool and promise evil fun.

You lift your left leg up. . .

Tools like AIBO Navigator don't actually alter AIBO's behaviour in any lasting way. You could always torture an AIBOLife dog until it became a nervous wreck, but it would still remain stuck within the confines of its programming. Thankfully, you're not limited to just these couple of options. If you want to alter AIBO's personality or movements, you've got two options. Sony sells a package called Master Studio for the princely sum of \$930. Aibopet offers a free package called AIBO Editor, although you will still have to put out \$85 for a programmable Memory Stick.

The differences? Well, apart from the fact that AIBO Editor is free, it works only to create motions for AIBO, where Master Studio allows you to set out behavioural patterns as well. If you're keen on the idea of AIBO programming, both applications are a good idea: Master Studio can lay out the logic for your AIBO, and AIBO Editor can set the actions to a degree that isn't possible with the Action Composer part of Master Studio. In Action Composer's favour, it allows you to create the MIDI files used for AIBO's beep tones.

Open the pod bay doors, AIBO

Of course, the worrying factor in using 802.11b is its near legendary insecurity. While it'd be a really bad idea to entrust a complicated task to AIBO, imagine the shock you'd get if he turned on you and started very slowly marching down on you with an evil red gleam in his eye. By default AIBO uses a very simple IP addressing scheme, so someone with a copy of Navigator could conceivably wrest control of AIBO away from you. On a more worrying note, Master

Master Studio is broken into two applications: Behaviour Arranger and Action Composer. Behaviour Arranger gives AIBO a flowchart approach to his movement and play logic, and is moderately easy to get to grips with, although the inclusion of a real manual rather than a PDF wouldn't have gone astray.

The key to getting a good performance out of AIBO is to dedicate the time working with your tools of choice to make him sing. Or, in my example, urinate. It's not the most original idea for an AIBO, in fact it's probably the least original. But I'm going to do it anyway. The first step to making our widdling AIBO is to decide when and how he's going to, well, go. I figure seeing a pink ball is a good trigger, but then I'm a sadist, so your opinion may vary.

First step in Action Composer is to create the library and the action itself. Every AIBO action is made of three components: Movement, Sound and Light, and Action Composer uses three very similar tools to create actions. My AIBO is very definitely a boy dog, so it will need the time honoured 'lift back leg for a period of time, then waggle it a bit' motion. Action Composer works in a similar manner to most video editing software. AIBO's actions work along a timeline. You add keyframes, define the motion for that keyframe and the software works out the tweening for all the motion in between. Our micturating canine will lift his back right leg, shake it a bit once he's done and then return down. Adding a sound file of running water just makes the joke that much classier.

The way Action Composer confirms and saves files is very odd, and involves more saving steps than should be necessary. It makes sense once you know what you're doing, but not before. Action composer won't let you move AIBO around faster than his motors will move, but will let you create actions that lead to AIBO falling over, as was the case with our leg-lifting effort. It takes quite a bit of work to get the other legs to compensate, something I was never entirely happy with the look of.

The behaviour composer side of things is hindered by Sony's instructions, which don't have a lot of detail on how the code detects the ball. Pecking around in the provided code samples gives me the basic idea, but a reference guide would again be handy. Once I've worked out the logic of getting him to recognise the ball, creating the flowchart is quite easy. Insert a startup subroutine (we'll use Sony's provided one) to make AIBO walk. Set up AIBO to walk around but not bump into things — again, another provided subroutine. Then it's just a matter of inserting a custom subroutine that says 'Whenever you see the ball, do the wee-wee motion'. Then just place the ball in front of AIBO whenever you feel the need for a juvenile giggle.

AIBO hacking for complete lazy bastards (like me)

AIBO Master Studio and AIBO Editor offer potential AIBO programmers a lot of power — and a great way to spend a weekend — but for a lot of users who might look at AIBO as more of a novelty item, the practical benefits of spending fifty hours just so AIBO can do a perfect dropkick aren't as apparent. If you fit into that category, despair not, as tools exist for simple-yet-satisfying AIBO modifications. The vast majority of these work with AIBOLife, the AI package for AIBO, although they can be applied elsewhere. It's definitely worth backing up the Memory Stick before starting out messing with AIBO as a crash could be fatal.

CatDog: The eternal struggle

The competitors:

Dog: AIBO. Sony introduced the 210 model AIBO in 2000, so that makes this AIBO technically two years old.

Cat: Harriet. A female domestic shorthair, just a touch over one year old. One of three cats I own.

Purchase cost

AIBO costs \$3000 plus software. Harriet cost \$70 from the RSPCA. Or to put it another way, I could have bought 42.85 cats for the price of one AIBO. Harriet 1 AIBO 0

Running costs

AIBO uses power, but certainly not at the rate of around \$5 a week it costs to feed Harriet. Maintenance on AIBO is much cheaper too: he doesn't need to go to the Vet every year for preventative boosters. Harriet 1 AIBO 1

Waste byproducts

Some of the stuff that comes out of Harriet is very toxic, but it is biodegradable. AIBO doesn't excrete, but he runs on power from a variety of sources, some of which have a half-life of millions of years. Harriet 2 AIBO 1

Running time

While Harriet may only run around the house in short bursts, she essentially recharges herself and knows where the charging point — in this case her foodbowl — is. AIBO runs for two hours, makes a mopey sound and falls over. Harriet 3 AIBO 1

Lap friendliness

OK, this is a touch subjective. If you want a psychotic maniac with claws and a shedding habit, Harriet's your girl. On the other hand, if you enjoy still having flesh on your legs when your pet of choice tries to climb into your lap, AIBO is streets ahead — although he'll fall over if he attempts it. Harriet 3 AIBO 2

Storage potential

AIBO accepts specific Sony Memory Sticks with a 8MB storage limit. Attempting to put a memory stick into Harriet wouldn't be wise. Harriet 3 AIBO 3

Which makes a draw. Time to bring the two parties face to face. I was envisaging a tussle of epic proportions, but Harriet quickly adapted to AIBO, sniffing him in all the right doggie areas, rolling around in front of him and then becoming bored. Eventually AIBO's batteries ran out, which I guess makes Harriet the moral victor.





woof

ACustomZ

AIBO uses MIDI beep codes for all communication, and I do mean all. It's somewhat like having a living, non-functional motherboard that refuses to boot. After a while, you could 'train' yourself to recognise the different codes, but why bother? ACustomZ allows you to hack the sound tones that AIBO uses, either with other MIDI tones or very low quality WAV files.

AIBO's WAV recognition only extends to files in a very specific format. 8-bit, mono, 8000 samples per second. Luckily for most, you already have an excellent tool for downgrading sound files to this exact format. The name of this wonder package? Sound Recorder. OK, stop laughing. Sound Recorder is inbuilt to Windows, runs quickly and doesn't have a large memory overhead in the way that more fully featured sound packages do. It's all a matter of the right tools for the right job.

In under half an hour I had AIBO-the-beeping-and-chirping-plastic-pal who's fun to be with!

Pass the new brain, Igor

Now, having an AIBO that screams 'Exterminate!' every time it sees the pink ball is a lot of fun, but does little to change AIBO's basic behaviour structure, and for this we turn to a couple of other tools: Browser23 and AIBOTool. Browser23 gives a simple layout of the current status of your AIBO, including its maturity level, language and other distinguishing features. Besides all this no doubt fascinating statistical material, it also allows you to mess around with AIBO's evolutionary pattern. AIBO's growth pattern is predicated on how often you play with him, and how much time he is on. After a set period of activity and/or time, he'll 'evolve' to another stage. Browser23's aptly named Brain Surgery function allows you to sidestep all this messy quality time and allows you to evolve/devolve your AIBO at the click of a mouse.

AIBOTool also has a brain surgery function, although it uses slightly different names for each stage. It has additional functionality not present in Browser23. More of AIBO's core functions can be altered, most notably in the area of colour recognition. AIBO's colour recognition is way ahead of any real dog, but it still only sees colour in a fairly limited band.

AIBO has five colour preferences — Ball, Flesh, Favourite Colour, Hated Colour and Party Mascot Colour (for use with the Party Mascot pack). AIBOTool allows you to change these colours, although they can only be swapped between the colours that AIBO understands. It's also quite fun to confuse people who think they know how AIBO works, when he refuses to have anything to do with the pink ball, but just loves the blue drapes.

Bender

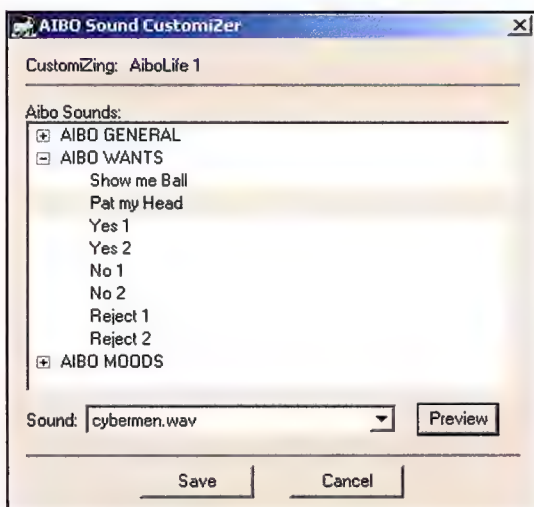
What better way to protest Fox's cancellation of Futurama than by besieging its offices with an army of robot dogs all hell-bent on getting access to some nutritious alcohol? OK, maybe that wasn't the original idea behind the Bender personality, but it's still a very good idea. A lot of effort has gone into matching the speech samples with Bender's body motions, and he's great for a quick laugh. Note that it's a quick laugh: Bender doesn't move much and recognises the pink ball but doesn't really care.

ObeyCat

OK, obviously someone's never actually been near a real cat. ObeyCat sounds like a cat, moves like an AIBO, and obeys your every command, as long as it can hear you correctly. Just like a real cat doesn't do this in any way at all. To be fair, it is promoted only as a simple programming example for others to build on, and on that basis it's quite acceptable.

Disco AIBO

Disco AIBO makes use of AIBO's beep tones in order to make AIBO dance. The dances themselves are programmed in AIBO editor, and use a beep tone at the start of a song to queue the dance that follows. Predictably some dances work much better than others, but if you don't like a dance you could always program one of your own.



ABOVE: Set AIBO to talk dirty to you and make scary bear noises.

AIBO And Costello

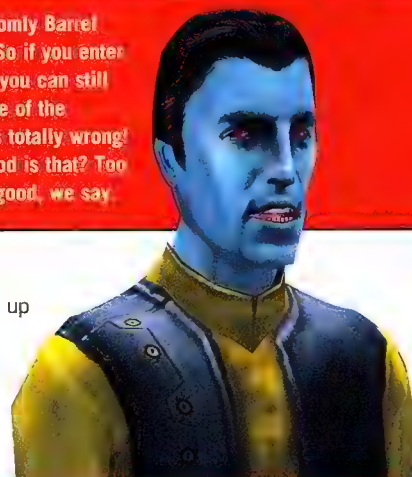
Possibly the worst AIBO-related pun ever, this requires two AIBO to run through a series of comedy sketches. Like Furbies, AIBOs can recognise each other, making it possible for AIBO personalities like this one to work.

Winners are sinners... or something like that.

'Tippee! WooHoo! Suck on that, you fools! I pretend to call my friends! Go away parents, I don't need you anymore! I am the Champion! I am the Greatest! I AM AN ATOMIC COMPETITION WINNER!'

These are just some of the expressions the winners of this month's competitions will be heard screaming as they run naked down the road under a full moon. Do you want to be just like one of these "cough" winners? All you need to do is get one of the answers to the four competitions right, and

be randomly Barrel Girled. So if you enter all four you can still get three of the answers totally wrong! How good is that? Too bloody good, we say.



Jedi Knight II: Outcast

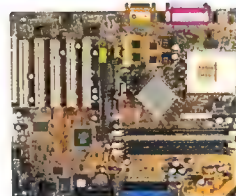
'Own a PC you do. Want this game you must. Erect lightsabers, joyous they are. Slice up Storm Troopers, in this game you will.' According to Yoda, who we've got locked up in the dank depths of the glove box of Katey Kate, our designer, JKII is THE first person shooter to own at the moment. We've got three copies of this masterpiece to give away. Props to Activision (www.activision.com.au), for being so generous.

Q: What is the purpose of mitochondria?

A7N266-C

Hey mobo, you looking at me? Watch yourself punk, before I snap off your Southbridge and RAM it up your IDE port. Just because you've got lovely integrated Dolby Digital sound and a snazzy TwinBank memory controller doesn't mean I can't make you beg for mercy. And I don't care if you're the prize for this question, generously donated by Cassa (www.cassa.com.au), I'm still going to show you a world of hurt. Cie la vie? Huh?

Q: In French, is a computer un or une?



Athlon XP 1700+

Have you ever tried to function with your brain removed? Not easy huh? Well, the same thing happens when you remove the CPU from your motherboard: your PC will start drooling heaps and defecating in its own case. Not good. So we've got an Athlon XP 1700+ CPU thrown our way by the beloved boffins at AMD, to now throw your way. Soak up a little square of organic ceramic, it's not oblique.

If you hold your new CPU at an angle it just may shine on like a crazy diamond. Crazy huh?

Q: What is the name of the ancient procedure that involved drilling of holes in the skull for enhanced head goodness?



Web hosting

So you've devoted months of your life to building the coolest darn 'Mating rituals of the Baluchian pygmy gerbil' site on the Net. And it's going to cost you an arm and a leg to host it someplace secure and reliable. Until you see this awesome competition. We've got six packs, each composed of three months hosting for a 20MB site, with 500MB worth of traffic, and two 5MB POP3 email accounts, valued at \$85, to give away to six very special winners. You can thank Ellis Technology (www.ellistech.com.au) for supplying the good stuff.

Q: How did canned spiced ham become a term used to describe wasteful and annoying email or messages over a network?



Email entries to win@atomicmpc.com.au or post them to: Atomic, Competition Name, PO Box 275, Beaconsfield NSW 2014. The closing date for entries is 15 May 2002. Winners will be announced in Atomic 18.

Atomic 14 winners: Q1: A. The C. (Which television program did the characters Zebboles and Dougal appear in?) A. Magic Roundabout. W. Q2: M. (What year was the first computer virus created?) A. 1982. W. Q3: R. (Which company developed the first personal computer?) A. Apple. W. Q4: G. (What year was the first personal computer introduced?) A. 1981. W. Q5: G. (What year was the first personal computer introduced?) A. 1981. W. Q6: G. (What year was the first personal computer introduced?) A. 1981. W. Q7: G. (What year was the first personal computer introduced?) A. 1981. W. Q8: G. (What year was the first personal computer introduced?) A. 1981. W. Q9: G. (What year was the first personal computer introduced?) A. 1981. W. Q10: G. (What year was the first personal computer introduced?) A. 1981. W.

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Go to www.atomicmpc.com.au/dealers.asp?mode=1 to find the details of the following resellers, manufacturers and distributors, plus many more. The site lists the Web address, company address, phone, email and fax. Our Web site will help you to find that elusive product, the

ideal reseller, manufacturer or distributor of a particular brand; or simply a product type. If you know what you are looking for, you can search for the most convenient place to buy it or simply research the options available to you. It's up to you how tight you set the criteria: you can do an advanced search and cross-reference by product, postcode, brand and so on. So quick and simple you'll wonder how you ever did without it!

- 3CO
- AA Brothers
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- Access 1
- ACCO Australia
- Accord Technologies
- Acer
- Activision
- A Drive Computers
- Allteq Pty Limited
- Amexcom
- Another World Computer Centre
- Ailean Technologies
- Alphazone Computers
- ARC Computers
- Aspen Tech
- ATF Computers
- AusPC Market
- Austin Computers
- Australia Computers Online
- Australia IT
- Australian Computer Recyclers
- Australian Network Solutions
- Autodesk
- AV Computers
- Below Zero
- Best Byte
- Bevdan Business Services
- Bitronics Computers
- Bits & Bytes
- BITS Computer Graphics
- Bitstorm
- Brimar Electronics
- Briter Computers
- Brother International
- Cam 1 Computer Wholesale
- Centercom Computers
- CIP Computer Solutions
- Compaq Computer Australia
- Complete Peripheral Services
- CompuEdge Pty Limited
- Computer Cyber Shop

- Computer store @ Newport
- Computer Troubleshooters
- Computer Warehouse
- Computers 4 Less
- Connect U Up Computing
- Connexus Internet
- Cool PC
- Cougar Computers Canberra
- CR Computers
- Creative
- Creative Zone
- Crossys Computers & Electronics
- CW Supplies
- Cyberdec Australia
- Cybertech Consulting
- Cybus Computers
- Cydex Computers
- D Link Australia
- Dell
- Diife
- DNAML
- Dot Systems
- Duncan Computer Services
- DX Computers
- EBM Computers
- Electronic Product Warehouse
- Emagen
- Eurocom Computers
- EPSON
- EYO Technologies
- Flexinet
- FNQ Computers
- Focal Point Computing
- Forte Computers Publishers (Aust.) P/L
- Fuji / Hanimex
- Games Warehouse
- GCC Technology
- Gigaworld Computer Systems
- Go-Xtreme Tek
- Griffier Enterprises
- Guillemot
- Hallmark Computer

- International
- Hewlett-Packard
- Hitachi Australia
- Hollywood 7 Computers
- HP Paradise
- Impact Systems Technology
- IMSI (Australia)
- In Learning
- Ingram Micro
- INKme
- Inktec Australia
- Innovision Technology Australia
- Integrity Data Systems
- Iomega
- IT2 The Max
- IT National
- Jack Of All Games
- Jim's PC
- Karana Computer Systems
- Kingston Technology
- KM Computer Systems
- Kodak Digital & Applied Imaging
- LaCie Australia
- Landmark Computers
- Landmark IT Resources
- Lanyon Computers
- Laptop Land
- Leader Computer Systems
- Leading Pacific Australia
- Lemurian Technologies
- Lexmark
- Lidcam Technology
- Loucra Computers
- Mac Troubleshooter
- MacroMax Computers
- MacSense Australia
- Mates Rates Computers Services
- MAUS
- Maxtek International
- Maxwell Optical Industries
- MegaPC
- Microdirect
- Micropaq

- MicroStar International
- Microstructure Computers
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- Mindflux
- Mitsubishi
- Mobile PC Workshop
- Modtech
- Multimedia Technology
- Navada Computer Services
- NETGEAR
- NetPlus Micro Computers
- newcomputers.com.au Box Hill
- newcomputers.com.au Oakleigh
- NG Computing
- NoLimitz Computers
- Nortec Computers
- Notebook Solutions
- OA-Link
- Ocean Office Automation
- OKI
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- Online Marketing
- Organiser World
- Overclockerz Supplies
- Oztec Computer
- Palmwoods Computers
- Panasonic
- Parramatta Computers
- PAW Products
- PC Case Gear
- PC Case Mods
- PC Cooling Australia
- PC Extreme
- PC Magic
- PC Repair Centre
- pcXtra Computers
- Peakhour
- Performance, Memory and Peripherals
- Perpetua
- Philips
- PICA Software
- Pioneer Computers
- Point Computer Systems

- Proven Technologies
- Pullman Computing
- Punch Technology
- Purpose Built Computers
- QD Innovative Computer
- Questek Components
- Rectron Electronics
- Ricoh Australia
- RTV Computer
- Sage Distribution
- Samsung
- Santacom Computers
- Sanyo
- Sasquatch Solutions
- Sato Enterprises
- Scorpion Technology
- Shane's Micros
- Sharp
- Short and Tall Computing Services
- Silicon Memory Technologies
- Sony
- Speedcom
- Surplus Computer Products
- TEAC
- TeamLink Australia
- Technology shop
- Techno Magic
- Tech Pacific
- The Cartridge Man
- THX - The SONY I.T Store (Parramatta)
- Toowoomba Computerland
- Toshiba
- Trinitix Computers
- Tweak Town Shop
- Viewsonic Australia
- Warren Computing
- WB Gamezone
- Western Computer Networks
- Xclusive Software
- Xenon Systems
- Yamaha Music

Rants 'R' Us

While Atomic is chock full of meaty goodness, it simply isn't large enough to contain the wealth of information stored in our reader's cranial spaces. So we've narrowed this treasure trove of reader tips and comments down to two pages jam-packed full of life enriching information. This month's POTM and LOTM will both be groovin' to the sound of a set of Altec Lansing APT3 speakers worth \$250 each, courtesy of the ever generous people at Innovision (www.innovision.com.au)

LOTM: More than one use for a pencil

This month's letter of the month shows there is a lot more that you can do with a pencil other than merely unlocking an Athlon, playing dot-to-dot or jamming one's nasal passages.

A little note on the ATI Radeon 8500 in your recent video card roundup. The best model for this card is the LE — forget about paying an extra \$200 for the full retail version. This is because there is no difference hardware-wise between the two cards except for one resistor. The core is obviously the same and if you look at most LE models they come with Hynix 3.6ns RAM, which is identical to the full retail one (only very recent cards come with 3.3ns Hynix). The only difference is a resistor that controls the voltage to the RAM chips. For the 8500LE the voltage to those chips is below specifications, which is why you cannot overclock to 275Mhz memory (while the core overlocks to that easily). But there is a simple workaround for this using a pencil and a voltmeter! Check this article www.xcl-clan.com/articles.php3?id=29&p=1. My LE runs at full retail specifications after doing the pencil trick (I've got to 300/305 with no artifacts). I'm also using a BIOS flash overclock method that is so much cleaner than software tweekers. My point here is that the Radeon 8500LE is probably the best performance/value (IMO) solution out there right now. Granted it takes a bit of fiddling but it's well worth it.

Agura

POTM: Kiss and Tell

www.atomicmpc.com.au/forum.asp?cat=ge&top=35892

POTM this round is more like Thread of the Month, really. Most posters in it probably deserve an award, but it's got to go to the thread starter madrat007 for sheer excellence. madrat007 wanted to know how to kiss a girl properly. . . and naturally Atomicans were happy to help. madrat007 then ran off to his girl next door, used the Atomic Kissing Method successfully, then, understanding his priorities, ran back home to post about how well it all went. Priceless!

Praise for Telstra. WTF?

I do realise that I am going against the grain writing this letter, but I feel that contrary to other peoples' experiences I had a great experience during my dealings with Telstra, and for a change thought I might say something nice about the big T. The other day, out of frustration with the speed and cost of dial up, I subscribed to Telstra's ADSL. It took just two days for the modem to turn up, which surprised me no end, and when I got home I could not wait to set it up. Then came the first problem, and after 3-4 hours of tinkering I had to resort to the help line. The call was made with an expectation of poor service but what I found, at 2am in the morning no less, was



nothing short of the best customer service I have experienced in a long time. The call was to no avail: my problem was apparently bigger than what could be fixed over the phone, so a booking was made for a technician to visit a few days later. Normally I'd be really dirty that all this was happening, but the guy on the phone was so helpful that I felt fine. Come the day of the appointment, I receive a phone call five minutes prior to the 8-12 timing that was agreed upon, seeing if all is OK to come around and fix things up. This is not something that happens very often these days: they normally turn up an hour after the latest time they said they would. Matt the serviceman came around and fixed the problem in no time at all.

Everyone has heard the horror stories of the big T and how its pricing plans are a bit horrendous, but I just thought that it should be said that the people working for Telstra are really excellent, at least I found them to be so.

Ben Fleming

Twenty Questions

I have been a frequent reader for the last five months, and I think your magazine is great. I am on the verge of starting my own Internet site as a hobby and a source of money but I'm unsure about a few matters. Firstly, what sort of legal terms should I be aware of before I start my little venture (I mean the terms and conditions they don't want you to know about until it is too late)? Secondly, I am about to purchase an AMD Athlon 1800+ XP with a L/ Tec T200 and a 40GB hard drive. Will this be sufficient with a 56K modem? I'm also getting Windows XP Home as part of my system (I had no choice in the matter) — will I have any trouble with my operating system and my Web site? Finally, I am planning to be posting home made animations on my Web site. Are there any legal complications and what is the best way to prevent them from getting stolen? Your opinion in the matter would be appreciated.

Sascha Karner

Your setup should be fine. As for protecting your Web site from copying, the easiest is disable right clicking within your Web site, although this isn't foolproof.

Squish those bugs

Your review of MOHAA was spot on except for no mention of its chronically annoying bugs! Running on an AMD 1000MHz, SB Live!, 512MB RAM and a GeForce3 Ti200, I've never had a game crash so much before. The main problem for dialup modem users is that each time the game goes to load a level it tries to connect to the Internet, and if no connection is available, the game freezes. The only way to stop this is to disable 'Dial New Location' in the Control Panel. Also, regular freezes in the game made gameplay frustrating. Still, I loved it. I played it through and have to say it's the best FPS I've seen — I just hate dem bugs! Cheers

Adam Shepherd, Barossa Valley

You'll find the new 1.11 patch has fixed the dial up modem problem. As for the other bugs, Bennett hasn't had a single crash since installing the game several months ago, leading us to believe that it's probably a problem with your system, not the game.

NVIDIA's naming scam

In the March issue you reviewed the GeForce4 MX and recommended it to readers. I would like to point out some of the major problems if you're buying it to play upcoming games. The GeForce4 MX is a no go card, with the most major of its problems being that it is *not* DirectX 8.0 compliant, and it does not have DX8 pixel shaders. Now we all sit around waiting for shiny new games to come out which look better than before. However, the number of Quake 3 games is reaching critical mass. There may be minor visual tweaks but these are essentially the same engine, which can run on an 8MB Vanta. To get newer, prettier engines the developers will need to switch over to DirectX 8.0, which they'll only do if they feel the majority of users

have cards that will support it. This is the problem. The badly misnamed GeForce4 MX will have consumers believing they are buying a budget DirectX 8.0 card, when in fact they are only getting a high-end DirectX 7 card. This means Carmack and the rest at ID can't assume most users will have DirectX 8 video cards. Luckily ID appears too far into the development of the engine to be able to switch APIs now. But the net effect of buying the GeForce4 MX as a high speed budget card will be to stop game developers using new technology. To quote Carmack's .plan:

(<http://finger.planetquake.com/plan.asp?userid=johnc&id=15810>): 'GF4-MX will still run Doom properly, but it will be using the NV10 codepath with only two texture units and no vertex shaders. A GF3 or 8500 will be much better performers. The GF4-MX may still be the card of choice for many people depending on pricing, especially considering that many games won't use four textures and vertex programs, but damn, I wish they had named it something else.'

Oliver

There's always a dud

The first issue of Atomic I ever brought had a free CD on the cover. When I insert it into my drive Nero asks if I want to create a CD. But this CD has no data on it and can't even be written to? Is this CD meant to be blank or should it have data? Since I am a subscriber and have brought every back issue off you is there any chance I could get another copy? BTW: last month my wife won CivIII and she loves it. Thanks Atomic, your mag RoXDrz :D

C—HugE

Apparently the universe will lapse into a state of flux and imbalance if there isn't at least one dud in a batch of cover CDs. Send your coaster to the postal address at the front of the mag and we'll give you a shiny new one.

Feeling the power

Recently, my area suffered a short power out, and I am assuming at some point a power surge/spike rendered my ASUS A7V133-C motherboard into a permanent powered off state. It shows no signs of life; not even the onboard LED lights up now. Is my assumption correct? Did a power surge get through my power surge 'protector' and if so, can I expect any/most of my other components to be able to be donated to Atomic's FrisbeeMarkTM?

Given that I might at some point, and I'm stressing 'might' here, actually use my computer for work related activities other than getting myself fragged, is it worth investing my hard earned money in a UPS such as the couple reviewed in last month's magazine (Issue 14), or should I just go for a \$40-\$60 power surge protector? Thanks

Bronksy

It's probably only your mobo that died. We're always a bit sceptical of the el cheapo surge protectors. For peace of mind, we recommend purchasing a decent UPS, especially if you're going to be doing business on your machine.

Price Problems

I was interested by the review of Dell's Inspiron 8200 as featured on page 54 of this month's edition. I went to the Dell Web site to check it out and found that an identically specified laptop as the one in the review actually costs \$6,056.40 as compared to the review price of \$5,599. The E-Value code for this combination is C510309. I was able to obtain a similar price to the review system by changing from GeForce4 Go -> GeForce2 Go and from Enhanced UXGA -> UXGA. Would it be possible for you to investigate the reason for the discrepancy in price? Cheers,

Hamish Rodda

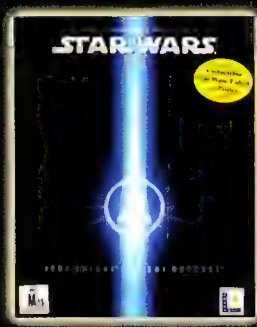
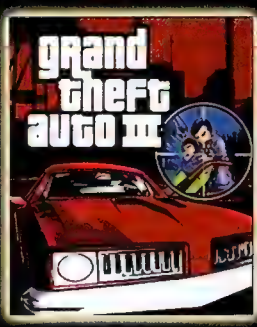
After speaking to Dell, you'll find the price has been adjusted. Sweet.

O

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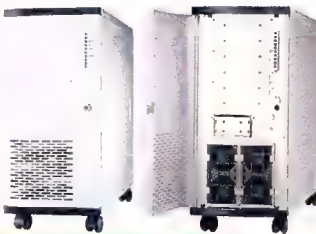
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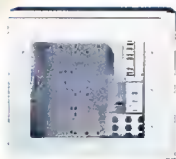


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Notebook cooling pad



NB-600

Notebook Cooling Pad
Dissipates hot air from the bottom layer of notebooks.

Security system



SS-100

Security System
Power source & Reset locking by PIN. Built-in timer. Ideal for server protection or timed usage control.

Just® Cooler

Worldwide Patents

Monitor Cooler

MC-100

Monitor Cooler
Maintains air circulation from monitor, serves as a thermal radiation preventer & dioxin odor terminator.



Remote Controller

RC-168

JUST COOLER
PC REMOTE CONTROLLER

NEW

3.5"/5.25" Bay System Cooler

ST-900

Mainboard Cooler
Forces air onto drive bay area to increase system reliability.

TT-900

Reversible Twin-Turbo Cooler
Keeps CD-RW drive cool, essential for reliable recording.

5.25" Bay HDD Cooler



HD-100

2-Fan HDD Cooler



HD-200

3-Fan HDD Cooler

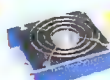


HD-120

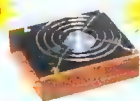
2cm thick fan



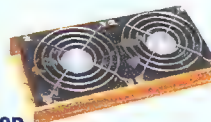
FC-610S
RAINBLOWER SYSTEM COOLER
68X73X30mm
Airflow:18CFM



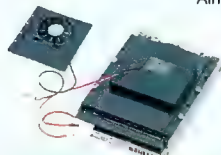
FC-810S
RAINBLOWER SYSTEM COOLER
88X93X30mm
Airflow:32CFM



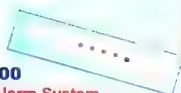
FC-1200S
RAINBLOWER SYSTEM COOLER
130X135X30mm
Airflow:90CFM



FC-910D
RAINBLOWER DUAL FAN SYSTEM COOLER 98X195X30mm
Airflow: 80CFM



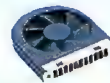
HD-600
Anti-Dust Cover Cooler
A specially designed housing base to prevent system overheating and accumulated dust.



FA-100
Fan Alarm System
A buzzer & pilot indicators with built in microprocessor. Detects up to 4 coolers' failure/malfunction.

System Cooler

Slim Case Design



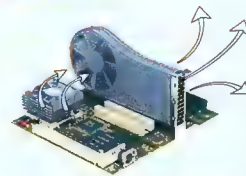
FC-500PS
FC-500 with installation adapter.
Fits printer port slot.



FC-100
Dimension : 120 x 90 x 27mm
Airflow : 32 CFM
Voltage : DC 12V
System cooler for Pentium II & A.G.P. Card



FC-200
Dimension : 108x 90 x 27mm
Airflow : 32 CFM
Voltage : DC 12V
System cooler for Server, Raid, industrial PC (on SCSI port)

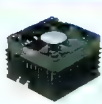


FC-900L
Central System Cooler
Draws heat out from mainboard & PC case.



DR-100
Dehumidifier
A specially designed cooling fan which removes moisture from PC mainboards

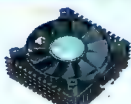
CPU Cooler / Second Fan



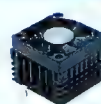
P-925B
For Intel Coppermine FC-PGA Socket up to 1GHz



P-22A (Dual Fans)
For **ATHLON (AMD K7)** & Pentium II-compatible



P-600 (6cm Fan)
For Socket 370 600MHz and up



P-500
For Socket 7, Socket 370 500 Mhz and up



CS-100
Chipset cooler for AGP cards, mainboards. Adhesive type



CH-420
AGP card chipset cooler (ball bearing) Clip type



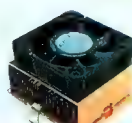
SF-600
(60x60x25mm)
SF-800/SF-800B
(Ball bearing) (80x80x25mm)



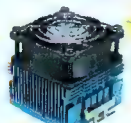
P-22SII (Dual Fans)
For SECC II & Pentium III



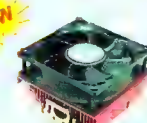
P-22C (Dual Fans)
For Celeron



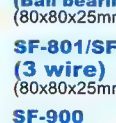
C1300
PURE COPPER HEAT SINK CPU COOLER FOR AMD/INTEL P3 UP TO 1.3GHz BALL BEARING



P-6000B
(BALL BEARING) CPU COOLER (6X6CM) FOR AMD K7 1.3 Ghz OR INTEL 1.13GHz.



P-8000B
(BALL BEARING) SUPREME (8X8CM) CPU COOLER FOR AMD K7 UP TO 1.5GHz OR INTEL 1.13GHz



SF-801/SF-801B
(3 wire) (80x80x25mm)
SF-900
(92x92x25mm)

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- 12 drive bays
- Listed on Intel reseller centre Website
- Dimensions: 208mm(W) x 442mm(H) x 490mm(D)
- Only \$288 RRP

IPC-4032 4 U rack-mount chassis

Features include:

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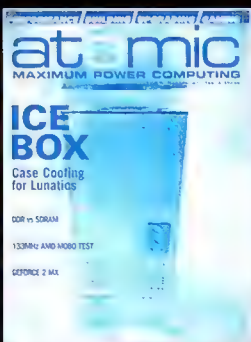
Baby got back?



Atomic 01
P4 vs. Athlon DDR
Duron overclocking
Voice comms
Historic 1st Atomic



Atomic 02
Graphics wars
Intel overclocking
Gamecube
SFX



Atomic 03
Case cooling
DDR vs. SDRAM
133MHz FSB AMD
Budget graphics cards



Atomic 04
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Dual CPU systems



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GBA destruction



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Audio CPU suckage
Pentium 4 gets good
Bar fridge PC
Neon and perspex



Atomic 10
Win XP
SSE2 vs. 3DNow!
How 3D filtering works
GeForce3 Ultra



Atomic 11
Free good CD
NVIDIA nForce chipset
Radeon 8500
Athlon XP



Atomic 12
Inside the Xbox
Athlon DDR motherboards
DIY LED case lighting
Inside your hard drive



Atomic 13
How 3D video cards work
Unlocking the Athlon XP
Gaming with Linux
Make your own UPS

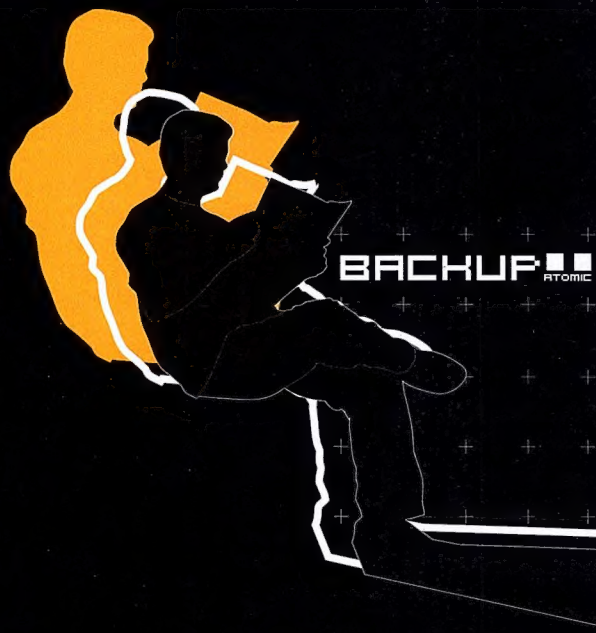


Atomic 14
Aluminium Case roundup
GeForce4 MX first look
64-bit computing
High end 3D card roundup



Atomic 15
Inside the GeForce4 Ti
Single vs Dual hardware
Arcade game emulation
Facial recognition tech

Back the f*** up



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Brand Loyalty

Try this at home: shake a can of mixed nuts, then open the lid. Oddly, you'll find that the biggest nuts — the brazil nuts — have come to the top.

Just like a can of nuts, a shakeup in the console industry brings the biggest nuts into the open. To see this in action, just visit any of the latest console forums. How's this for a healthy discussion:

Ragenord: There's no way I'm buying a Gamecube. It looks like my sister's makeup case.

Jimmeny: You suck. Xbox was designed by the same guy that does engine covers on Commodores.

Ragenord: Oh sure. Like you'll ever be old enough to drive.

Jimmeny: Yeah, well at least I don't wear my sister's makeup. . .

And so it goes. Even before they buy them, the patriots of the Nintendo, Sony and Microsoft camps are out waving their loyalties and swapping insults with anyone who will bite back. They're like Mel Gibson defending his farm, but with mice instead of muskets.

It's not the first time we've seen this type of behaviour, and it won't be the last. Remember the N64 launch? The words 'bi-linear filtering' suddenly became heavy ammunition. It didn't matter that it made the screen look like it was smeared with KY Jelly — you could smack down a Sony fan with a single techie phrase.

Then the PS2 arrived and Nintendo fans made a rapid retreat. The gritty menace of 'Shadow Man' suddenly became some weird-looking guy fumbling around for a torch. Sony fans were forged in legion, rising from the pixelated ether into a stunning and immersive gaming world.

It would've been fine if things had stopped there, but noooooo, Microsoft had to stick its ultra fat and sticky fingers into the mix. At first, the idea of building a console with PC parts seemed ludicrous, but thanks to NVIDIA, Microsoft now has the biggest and baddest machine on the block. Just watch those sparks fly.

These extremes of brand loyalty aren't new. Ford and Holden fans have been belting it out for years; Pepsi and Coke throw millions at advertising firms to get more people drinking their respective colas; and — perhaps the

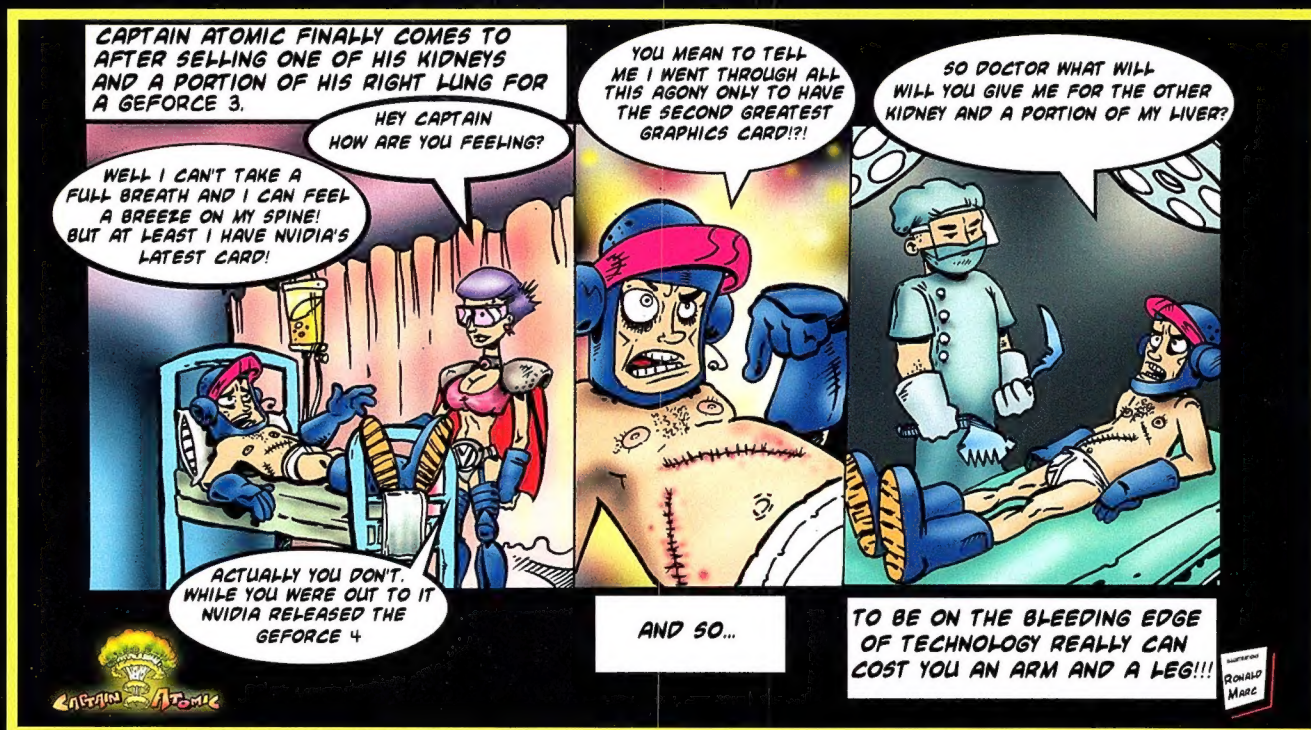
ultimate in brand loyalty — Harley Davidson encourages owners to permanently tattoo their skin with its logo.

Despite the megabucks that companies pour into it, the driving factors in brand loyalty aren't fully understood. Research suggests it all starts with the purchase decision: when we buy something, we're putting our own credibility on the line. The stronger the reason behind buying the product and the greater the risk — financial, intellectual, girlfriend — the greater the loyalty.

An example: you save for years to buy a home theatre system. You research reviews, make sure it's compatible with all your other stuff, and argue black and blue with your girlfriend until she relents. The last thing you're going to do is call your mate Barney and say 'Sure, my brand is utter crap! Make sure you get the other one or you're screwed.'

Just like our choice of consoles. We've read all the reviews, downloaded the spec sheets, and even waited in line behind snotty eight year olds to play the demos. We're sure as hell not going to agree with some other guy in a forum that tells us we've bought the wrong one. More likely, the fingers are going to type some serious expletives. Welcome to the world of brand loyalty.

So don't worry if you find yourself getting all hot under the collar when someone trashes your console — it's just their way of trying to justify maxing-out their credit card. Anyway, the next generation of consoles will leave these for dead. Our advice: try and resist the urge to shake your own can of nuts because you'll need the biggest ones you've got when the PS3, YBox and Gamesphere come to town.



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